Vol. 917 Number 1

OFFICIAL GAZETTE

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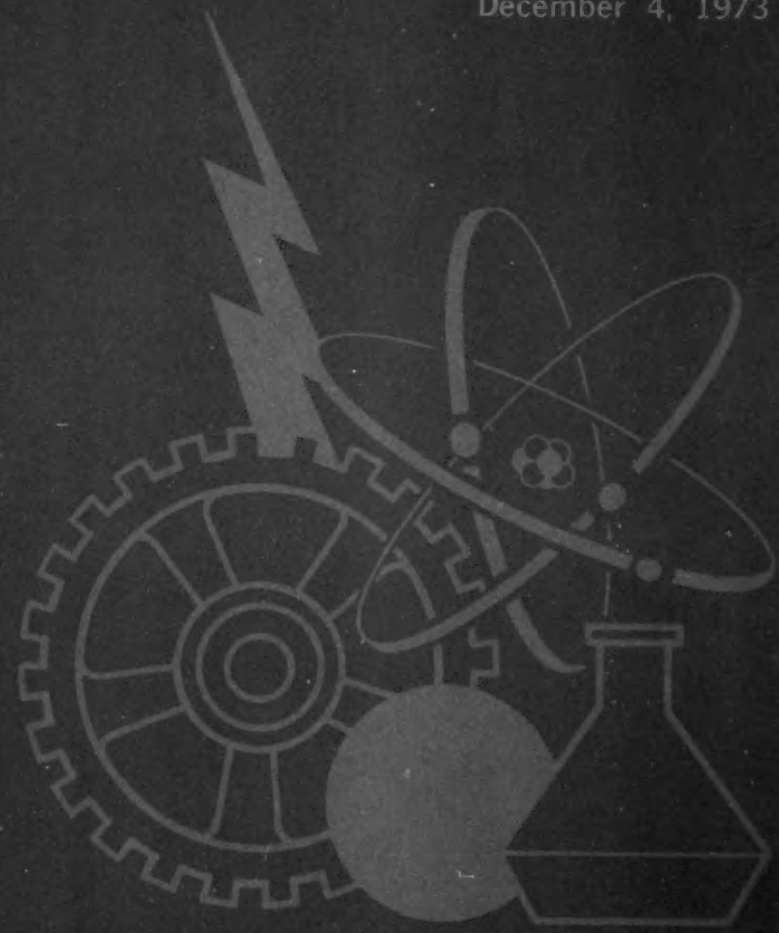
PATENTS

December 4, 1973



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OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE

December 4, 1973 Volume 917 Number 1

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PATENT OFFICE NOTICES

Board of Appeals Decisions Rendered in the Month of October 1973

Examiner affirmed	149
Examiner affirmed in part	16
Examiner reversed	34
Total	199

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before December 28, 1973.

Bellamy, Werten F. W., Standard Oil (Indiana), 200 E. Randolph Drive, Chicago, Ill. 60601

Peristein, Louis J., 5403 Chillum Place NE., Washington, D.C. 20011

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

European Patent Convention

The Convention for the setting up of the European Patent System was signed at the Munich Diplomatic Conference on October 5, 1973 by fourteen European states. The official text of the Convention is contained in one volume in three languages (English, French and German). Published editions of the official final text of the Convention are now available from the,

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RENE D. TEGTMEYER,
Nov. 7, 1973. *Acting Commissioner of Patents.*

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,734,228, W. D. Hay, CRIMPING APPARATUS; **2,759,358,** E. H. Shattuck, FILAMENT CRIMPING APPARATUS; **2,760,252,** same; **2,854,738,** A. G. Gray, NICKEL COATED URANIUM ARTICLE; **3,000,060,** Shattuck and Benedek, CRIMPING APPARATUS, filed May 9, 1973, D.C. Del. (Wilmington), Doc. C-4645, *Roselon Industries, Inc.* v. *Joseph Bancroft & Sons Company.*

2,743,378, Covely and Seeberger, SCAN CONVERSION SYSTEM UTILIZING RESOLVED WRITING DEFLECTIONS; **2,841,566,** T. A. Te Grotenhuis, HIGH POLYMERS WITH CHEMICALLY BONDED REINFORCING AND METHOD OF MAKING SAME, filed May 4, 1973, Ct. of Appeals, N.D. Ohio (Cincinnati), Doc. 72-1743, 72-1744 and 72-1803, *Westwood Chemical, Inc.* v. *Johns-Manville Fiber Glass, Inc., Certain-Teed Products Corporation and Ferro Corporation.* The orders and judgment of the District Court are affirmed, May 4, 1973.

2,758,358. (See 2,734,228.)

2,760,252. (See 2,734,228.)

2,841,566. (See 2,743,378.)

2,854,738. (See 2,734,228.)

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, filed May 3, 1973, D.C., E.D. Pa. (Philadelphia), Doc. 73-606, *Edward T. Molinaro and Anthony P. Catanzaro* v. *Lafayette Radio Electronics.*

2,923,507, L. S. Suozzo, CONSTANT SUPORT DEVICE; **3,148,870,** same, SPRING SUPPORT DEVICE, filed May 1, 1973. D.C.N.J. (Newark), Doc. C-596-73, *Carpenter and Paterson, Inc.* v. *Leonard S. Suozzo and Bergen Pipesupport Corporation.*

3,000,060. (See 2,734,228.)

3,023,300, G. Lehnert, METHOD AND APPARATUS FOR FORMING CABLE SHEATH; **3,208,256,** same, APPARATUS FOR THE MANUFACTURE OF CORRUGATED THIN WALLED METAL TUBES; **3,280,600,** same, METHOD AND MEANS FOR FORMING THIN METAL TUBING; **3,383,895,** same, COILABLE WAVEGUIDE, filed May 3, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1145, *Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft* v. *Justice Associates, Inc.*

3,061,139, B. Edwards, SELF-VENTING PACKAGE; **3,091,360,** same, NESTABLE CUP, filed May 4, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1161, *Illinois Tool Works, Inc.* v. *Foster Grant Company.*

3,091,360. (See 3,061,139.)

3,148,870. (See 2,293,507.)

3,159,505, Burgess and Johnson, BINDER PRODUCT AND PROCESS, filed June 6, 1973, D.C. Kans. (Kansas City), Doc. KC-3754, *Krause Milling Company* v. *Lincoln Grain, Inc.*

3,166,854, Packer and Benedetto, PLEAT-MARKING DEVICE; **3,306,603,** D. F. Ziers, HOLDING APPARATUS FOR SHEET MATERIAL, filed Sept. 20, 1972, D.C., W.D. Okla. (Oklahoma City), Doc. 72-661-C, *Lightron Corporation and Harold I. Kaplan* v. *George Callas.* Defendant forever restrained and enjoined, Dec. 22, 1972.

3,179,026, A. F. Crone, SEALING ELEMENT FOR PAVEMENT GROOVES; **3,276,336,** same, SEALING DEVICES FOR GROOVES BETWEEN STRUCTURAL BLOCKS; **3,482,292,** A. Frohlich, ENDSTOP MEMBERS FOR SLIDE FASTENERS, filed Mar. 26, 1971, D.C., W.D.N.Y. (Buffalo), Doc. C-1971-136, *Acme Highway Products Corporation* v. *Watson-Bowman Associates, Inc., Stewart C. Watson and Thomas C. Bowman.* Stipulation and order of dismissal filed May 10, 1973.

3,183,529, G. Beuchat, SWIMMER'S FOOT-FIN WITH THRUST-ACCELERATING DEVICE, filed June 5, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1261-LTL, *U.S. Divers Company* v. *Under Sea Industries.*

3,208,256. (See 3,023,300.)

3,254,970, Dittrich and Shepard, FLAME SPRAY CLAD POWDER COMPOSED OF A REFRACTORY MATERIAL AND NICKEL OR COBALT; **3,322,515,** same, FLAME SPRAYING EXOTHERMICALLY REACTING INTERMETALLIC COMPOUND FORMING COMPOSITES, filed Apr. 25, 1973. D.C., E.D.N.Y. (Brooklyn), Doc. 73C561, *Eutectic Corporation et ano.* v. *Metco, Inc.*

3,276,336. (See 3,179,026.)

3,280,600. (See 3,023,300.)

3,306,603. (See 3,166,854.)

3,316,574, R. L. Pare, ROAD EXPANSION JOINT, filed May 11, 1973, D.C. Del. (Wilmington), Doc. 4653, *Robert L. Pare and The General Tire & Rubber Co.* v. *The Johnson Rubber Company.*

3,322,515. (See 3,254,970.)

3,329,984, R. M. Akers, LOADING DOCK RAMP ASSEMBLY, filed Nov. 3, 1967, D.C., E.D. Wis. (Milwaukee), Doc. 67-C-361, *Robert M. Akers, doing business as R. M. Akers Mfg. Company* v. *American Dockbridge, Inc.* Judgment: Claim 5 of Patent No. 3,329,984 invalid, defendant has not committed any acts of unfair competition; defendant Rite-Hite has not attempted to monopolize trade and commerce in dockboards nor otherwise violated the Sherman Act. Plaintiffs do not have unclean hands, nor did plaintiffs commit fraud on the Patent Office, nor did plaintiffs violate the antitrust laws by the attempted enforcement of claim 5 of United States Patent No. 3,329,984. Except for the requests by the defendants for declaratory judgments which are merged in this judgment, this action, including all claims and counterclaims is dismissed on its merits, May 8, 1973.

3,383,895. (See 3,023,300.)

3,403,953, R. O. Clark, DEVICE FOR RENOVATING OLD CABINETS; Reg. No. 840,745 (CABINETPAK), Homewood Cabinet Top Company, filed May 7, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c1175, *Homewood Industries, Inc.* v. *Thomas Caldwell, individually and doing business as Cabinetpak Kitchens, Inc. et al.*

3,418,111, R. B. Herchenroeder, COBALT BASE ALLOY, filed July 31, 1972, Ct. of Cl. (District of Columbia), Doc. 301–72, *Cabot Corporation* v. *The United States.*

3,421,731, Koch and Rocher, HOT TOP MAINTAINING SYSTEM, filed June 7, 1973, D.C., W.D. Pa. (Pittsburgh), Doc. CA 73–471, *Metallurgical Exoproducts Corporation* v. *Pittsburgh Metals Purifying Company, Inc.*

3,479,873, H. Hermanns, SELF-CLEANING ELECTRODES, filed Mar. 2, 1973, D.C., E.D. Mo. (St. Louis), Doc. 73C 119 (4), *Emerson Electric Co.* v. *Fischer & Porter Co.*

3,482,292. (See 3,179,026.)

3,581,874, M. A. Keith, PORTABLE STACKING DEVICES FOR CONVEYORS, filed Apr. 15, 1972, Ct. of Claims (District of Columbia), Doc. 317–72, *Milroy A. Keith* v. *The United States.*

3,631,631, J. I. Greenstein, PNEUMATIC ABRASIVE CUTTING APPARATUS, filed Mar. 2, 1972, D.C., C.D. Calif. (Los Angeles), Doc. 72–461–CC, *Dental Gold Company, doing business as American Gold Company* v. *Futurecraft Corporation.* Stipulation to dismiss with prejudice and order thereon, June 7, 1973.

3,647,983, Fitzsimons and Phelps, KEY SYSTEM LINE CARD CIRCUIT, filed June 4, 1973, D.C., M.D. Fla. (Tampa), Doc. 73–275–C T.K., *San/Bar Corp.* v. *International Telephone & Telegraph Corp. and Graybar Electric Co., Inc.*

3,650,460, B. P. Lokey, PAPER BAG; 3,687,356, Goodrich and Waxlax, GUSSETED TYPE BAGS, filed May 29, 1973, D.C., S.D. Iowa (Des Moines), Doc. 73–117–2, *Great Plains Bag Corp.* v. *St. Regis Paper Company.*

3,665,318, Hoffman and Schonegg, RADIO RECEIVER; 3,714,585, R. C. Koch, SCANNING RADIO HAVING RAPID CHANNEL SKIPPING CAPABILITY, filed Apr. 6, 1973, D.C., E.D. Mich. (Detroit), Doc. 39931, *Regency Electronics, Inc.* v. *Crandall Wholesale Co.*

3,687,356. (See 3,650,460.)

3,705,061, E. B. King, CONTINUOUS REDOX PROCESS FOR DISSOLVING COPPER, filed May 14, 1973, D.C.N.J. (Newark), Doc. C–672–73, *MacDermid Incorporated* v. *Southern California Chemical Co., Inc.* Same, filed May 10, 1973, D.C., S.D. Tex. (Houston), Doc. CA 73–H–602, *Southern California Chemical Co., Inc.* v. *Philip A. Hunt Chemical Corp.*

3,714,585. (See 3,665,318.)

3,718,923, Horwitz, Gordon and Becker, BIPOLAR FLOATING INPUT, PARTICULARLY FOR DIGITAL PANEL METERS, filed May 8, 1973, D.C., E.D.N.Y. (Brooklyn), Doc. 73–C–638, *Gordon Engineering Company* v. *General Microwave Corp., doing business as Gralex Industries.*

3,737,866, R. H. Gruner, DATA STORAGE AND RETRIEVAL SYSTEM, filed June 7, 1973, D.C. Del. (Wilmington), Doc. 4674, *Data General Corporation* v. *Digital Computer Controls, Inc.*

Re. 27,510, J. Hoeltzenbein, ARTIFICIAL KIDNEY, filed May 7, 1973, D.C.N.J. (Trenton), Doc. C–616–73, *Vernitron Medical Products, Inc.* v. *Baxter Laboratories, Inc.*

Reg. No. 840,745. (See 3,403,953.)

Certificates of Correction for the Week of Dec. 4, 1973

Re. 27,320	3,708,219	3,728,175	3,739,649
Re. 27,601	3,709,950	3,728,383	3,739,711
Re. 27,604	3,710,957	3,728,450	3,739,803
Re. 27,606	3,711,045	3,728,538	3,739,897
Re. 27,633	3,711,767	3,729,006	3,739,983
Re. 27,684	3,712,613	3,729,223	3,740,143
Re. 27,708	3,713,687	3,729,420	3,740,269
Re. 27,731	3,713,908	3,729,536	3,740,333
Re. 27,744	3,714,035	3,729,546	3,740,513
D. 227,531	3,714,176	3,729,699	3,740,569
D. 227,707	3,714,623	3,729,918	3,740,633
3,516,782	3,714,900	3,730,571	3,740,660
3,542,587	3,716,895	3,730,731	3,740,693
3,573,211	3,717,746	3,730,739	3,740,897
3,595,813	3,717,972	3,731,001	3,741,276
3,596,008	3,718,472	3,731,044	3,741,438
3,627,773	3,718,489	3,731,045	3,741,802
3,629,856	3,719,082	3,731,047	3,741,986
3,636,221	3,719,220	3,732,095	3,742,033
3,639,157	3,719,474	3,732,129	3,742,070
3,642,426	3,719,830	3,732,463	3,742,317
3,645,556	3,720,288	3,732,645	3,742,329
3,646,071	3,720,656	3,733,121	3,742,365
3,655,655	3,720,707	3,733,179	3,742,381
3,659,018	3,721,258	3,733,309	3,742,413
3,666,632	3,721,653	3,733,796	3,742,469
3,673,474	3,721,679	3,734,003	3,744,963
3,676,398	3,721,692	3,734,071	3,745,133
3,683,027	3,722,458	3,734,873	3,746,342
3,685,602	3,723,101	3,734,953	3,746,371
3,689,468	3,723,135	3,734,975	3,747,970
3,693,370	3,723,145	3,735,464	3,748,039
3,693,697	3,723,258	3,735,482	3,748,272
3,694,466	3,723,469	3,735,617	3,749,890
3,697,955	3,723,475	3,735,848	3,750,003
3,699,169	3,724,143	3,735,909	3,751,542
3,699,531	3,724,427	3,736,135	3,752,048
3,700,710	3,724,513	3,736,855	3,752,764
3,700,771	3,724,529	3,736,871	3,753,936
3,700,883	3,724,776	3,737,051	3,755,176
3,701,660	3,725,203	3,737,391	3,755,802
3,701,798	3,725,248	3,737,697	3,757,644
3,702,251	3,725,350	3,738,013	3,757,889
3,702,734	3,725,363	3,738,457	3,757,979
3,702,963	3,725,403	3,738,554	3,757,998
3,703,530	3,725,433	3,738,755	3,758,232
3,705,181	3,726,054	3,738,800	3,758,742
3,705,491	3,727,515	3,739,034	
3,707,747	3,727,592	3,739,448	
3,708,211	3,727,767	3,739,460	

Disclaimer and Dedication

3,633,173.—*Charles F. Edge,* Los Angeles, Calif. DIGITAL SCAN CONVERTER. Patent dated Jan. 4, 1972. Disclaimer and dedication filed Aug. 17, 1973, by the assignee, *Hughes Aircraft Company.*

Hereby disclaims all claims of said patent and dedicates to the Public the entire term of said patent.

Dedications

2,730,338.—*Joseph S. Gregorius,* Tarentum, Pa. GLASS REFINING APPARATUS. Patent dated Jan. 10, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,736,218.—*Florian V. Atkeson,* Tarentum, Pa. CUTTING TOOLS. Patent dated Feb. 28, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,763,928.—*Harry A. Smith, Jr.,* Tarentum, Pa. TIMER CONTROLS FOR AUTOMATIC GLASS CUTTING MACHINE. Patent dated Sept. 25, 1956. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,782,569.—*Bruce D. Robbins,* Arnold, Pa. CORNER GRINDING MECHANISM AND METHOD. Patent dated Feb. 26, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,795,083.—*Robert M. Hainsfurther,* Brackenridge, Pa. METHOD AND APPARATUS FOR MINIMIZING WAVE IN ROLLED GLASS. Patent dated June 11, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,805,519.—*Walter A. Adamsky,* New Kensington, Pa. HANDLING GLASS SHEETS FOR THERMAL TREATMENT. Patent dated Sept. 10, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,805,520.—*Lloyd V. Black,* Tarentum, Pa. METHOD FOR BENDING AND TEMPERING GLASS. Patent dated Sept. 10, 1957. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,831,791.—*Daniel T. Downes,* Wilkinsburg, and *Edward Faustin,* Brackenridge, Pa. METHOD AND APPARATUS FOR PROCESSING GLASS. Patent dated Apr. 22, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

2,849,345.—*William G. Smith* and *Brook J. Dennison,* Tarentum, Pa. PRELIMINARY PRESSING OF BENT GLASS ASSEMBLIES. Patent dated Aug. 26, 1958. Dedication filed July 25, 1973, by the assignee, *PPG Industries, Inc.*

Hereby dedicates the remainder of its term to the free use and benefit of the People of the United States.

3,607,005.—*Gordon H. Chambers,* Philadelphia, Pa. PROCESS OF EXTRACTING VANADIUM. Patent dated Sept. 21, 1971. Dedication filed Sept. 4, 1973, by the inventor.

Hereby dedicates to the Public the entire remaining term of said patent.

Disclaimers

3,360,157.—*Richard Robert Bolt,* Lake Villa, and *Delbert Edmund Woble,* Carry, Ill. METHOD OF FORMING A COATED METAL CONTAINER AND ARTICLE PRODUCED THEREBY. Patent dated Dec. 26, 1967. Disclaimer filed Sept. 4, 1973, by the assignee, *American Can Company.*

Hereby enters this disclaimer to claim 1 of said patent.

3,548,936.—*Marion D. Kilgore,* Houston, and *Robert C. Pumpelly,* Dallas, Tex. WELL TOOLS AND GRIPPING MEMBERS THEREFOR. Patent dated Dec. 22, 1970. Disclaimer filed July 23, 1973, by the assignee, *Dresser Industries, Inc.*

Hereby enters this disclaimer to claims 1, 2, 3, 5, 6, 39 and 42 of said patent.

3,604,527.—*Warren H. Price*, Sheboygan, Wis. TRACTOR SUBASSEMBLY. Patent dated Sept. 14, 1971. Disclaimer filed Aug. 29, 1973, by the assignee, *Gilson Bros. Co.*

Hereby enters this disclaimer to claim 6 of said patent.

3,630,170.—*Nicholas Christo*, Boonton, N.J. TAPE AMOUNT INDICATOR FOR TAPE RECORDERS. Patent dated Dec. 28, 1971. Disclaimer filed July 26, 1973, by the assignee, *Continental Commerce Corporation.*

Hereby enters this disclaimer to claims 1 and 4 of said patent.

3,672,155.—*John M. Bergey* and *Richard S. Walton*, Lancaster, Pa. SOLID STATE WATCH. Patent dated June 27, 1972. Disclaimer filed Sept. 7, 1972, by the assignee, *Hamilton Watch Company.*

Hereby enters this disclaimer to claims 4, 14, 15 and 16 of said patent.

3,719,903.—*William Eugene Goodson*, Freehold, N.J. DOUBLE SIDEBAND MODEM WITH EITHER SUPPRESSED OR TRANSMITTED CARRIER. Patent dated Mar. 6, 1973. Disclaimer filed May 7, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to all claims of said patent.

3,729,794.—*Richard W. Douglass*, Needham, Mass. FIBERED METAL POWDERS. Patent dated May 1, 1973. Disclaimer filed May 2, 1973, by the assignee, *Norton Company.*

Hereby disclaims the portion of the term of the patent subsequent to Aug. 1, 1989.

3,731,237.—*Henry Richard Beurrier*, Chester Township, Morris County, N.J. BROADBAND TRANSFORMERS. Patent dated May 1, 1973. Disclaimer filed July 16, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1–4 of said patent.

3,736,093.—*Cadet E. Bowman* and *Frank Hayward*, Sycamore, Ill. INTEGRAL REGULATED HAND TORCH. Patent dated May 29, 1973. Disclaimer filed June 28, 1973, by the assignee, *Olin Corporation.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

3,748,597.—*Franz Karl Reinhart*, Summit, N.J. OPTICAL MODULATORS. Patent dated July 24, 1973. Disclaimer filed Aug. 10, 1973, by the assignee, *Bell Telephone Laboratories, Incorporated.*

Hereby enters this disclaimer to claims 1 through 8, 10 through 13, and 15 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the GSA Patent Licensing Regulations.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Requests for licensing information should be directed to the address cited with each copy of the patent application.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each. Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents; 18th and C Streets NW., Washington, D.C. 20240

Patent application 393,385. Recovery of Sulfur. Filed Aug. 31, 1973. PC $3/MF $1.45.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents; Washington, D.C. 20545

Patent application 306,510. Ductile Super-Conducting Alloys. Filed Nov. 14, 1972. PC $3/MF $1.45.

Patent 3,732,422. Counter for Radiation Monitoring. Filed May 23, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,736,126. Gold Recovery From Aqueous Solutions. Filed Sept. 24, 1971. Patented May 29, 1973. Not available NTIS.

U.S. DEPARTMENT OF THE ARMY
Chief, Patents Division; Office of Judge Advocate General; Patent Division, Room 2C–455; Pentagon; Washington, D.C. 20310

Patent 3,139,663. Concrete Casting Machine. Filed Sept. 29, 1961. Patented July 7, 1964. Not available NTIS.

Patent 3,373,741. Plastic Splint. Filed Mar. 19, 1965. Patented Mar. 19, 1968. Not available NTIS.

Patent 3,550,440. Pressurized Tensile Test Apparatus. Filed Jan. 8, 1969. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,550,909. Stake Extracting Apparatus. Filed June 24, 1968. Patented Dec. 29, 1970. Not available NTIS.

Patent 3,562,551. Unit Distance Counter. Filed Sept. 20, 1967. Patented Feb. 9, 1971. Not available NTIS.

Patent 3,591,113. Mast Support. Filed Jan. 13, 1970. Patented July 6, 1971. Not available NTIS.

Patent 3,609,613. Low Loss Transmission Line Transformer. Filed Nov. 3, 1970. Patented Sept. 28, 1971. Not available NTIS.

Patent 3,610,277. Pressure Actuated Flow Regulator. Filed Oct. 20, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,610,741. Flame Spraying Aluminum Oxide To Make Reflective Coatings. Filed Jan. 8, 1969. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,611,377. Doppler Radar With Target Velocity Direction and Range Indicator Utilizing Variable Delay Lines. Filed Jan. 21, 1970. Patented Oct. 5, 1971. Not available NTIS.

Patent 3,616,523. Glass Laser Window Sealant Technique. Filed Nov. 24, 1970. Patented Nov. 2, 1971. Not available NTIS.

Patent 3,620,940. Method of Inducing Polarization of Active Magnesium Surfaces. Filed May 12, 1970. Patented Nov. 16, 1971. Not available NTIS.

Patent 3,634,860. Doppler Radar With Target Velocity Direction and Range Indication, Utilizing a Variable Frequency Generator. Filed Jan. 21, 1970. Patented Jan. 11, 1972. Not available NTIS.

Patent 3,645,206. Ammunition Cartridge. Filed Feb. 19, 1970. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,645,810. Solid Fuel Composition. Filed June 14, 1955. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,646,263. Semiautomatic Television Tracking System. Filed Jan. 4, 1971. Patented Feb. 29, 1972. Not available NTIS.

Patent 3,651,425. Multiple Unit Laser System. Filed Dec. 22, 1964. Patented Mar. 21, 1972. Not available NTIS.

Patent 3,656,983. Shell Mold Composition. Filed Oct. 14, 1970. Patented Apr. 18, 1972. Not available NTIS.

Patent 3,665,514. Low Profile Size Adjustable Protective Helmet. Filed Sept. 22, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,665,857. Base Ejecting Ordnance Projectile. Filed Nov. 23, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,667,040. Sensor for Detecting Radio Frequency Currents in Carbon Bridge Detonator. Filed Sept. 28, 1970. Patented May 30, 1972. Not available NTIS.

Patent 3,671,968. Two Channel Direction Finder. Filed Jan. 26, 1970. Patented June 20, 1972. Not available NTIS.

Patent 3,673,064. Method of Eliminating Copper Contamination. Filed Oct. 29, 1970. Patented June 27, 1972. Not available NTIS.

Patent 3,675,327. Filled Cold-Curing Acrylic Resin as a Splinting Material. Filed Jan. 13, 1970. Patented July 11, 1972. Not available NTIS.

Patent 3,676,901. Adjustable, Quickly Releasable Webbing Connector. Filed Dec. 14, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,075. Method for the Detection and Classification of Defects in Internal Combustion Engines. Filed Oct. 20, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,588. Fastener. Filed Dec. 1, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,847. Photolithographic Etching Method for Nickel Oxide. Filed Mar. 15, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,677,879. Thermally Conductive Bearing Material. Filed Apr. 28, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,677,974. Multi-Purpose Conductive Adhesive. Filed Sept. 18, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,194. Digital Data Transmission and Detection System. Filed Jan. 26, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,678,276. Infrared Radiometric Detection of Seal Defects. Filed July 1, 1971. Patented July 18, 1972. Not available NTIS.

Patent 3,678,362. Solid State Pulser Using Parallel Storage Capacitors. Filed Sept. 17, 1970. Patented July 18, 1972. Not available NTIS.

Patent 3,678,398. Presettable Frequency Divider. Filed Mar. 23, 1972. Patented July 18, 1972. Not available NTIS.

Patent 3,680,138. Cross-Mode Reflector for the Front Element of an Array Antenna. Filed Sept. 21, 1970. Patented July 25, 1972. Not available NTIS.

Patent 3,680,406. Flexible Cams. Filed June 7, 1971. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,680,924. Endless Track Pin Assembly. Filed Mar. 6, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,010. Preparation of Ultrafine Mixed Metallic-Oxide Powders. Filed Sept. 14, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,011. Cryo Coprecipitation Method for Production of Ultrafine Mixed Metallic-Oxide Particles. Filed Jan. 19, 1971. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,162. Antenna Fabrication Method. Filed Dec. 27, 1968. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,681,715. Reciprocal Latching Ferrite Phase Shifter. Filed June 23, 1970. Patented Aug. 1, 1972. Not available NTIS.

Patent 3,685,347. Squib Switch Simulator. Filed Aug. 30, 1971. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,520. Fluid Electrical Generator. Filed May 6, 1971. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,591. Anisotropic Crystal Circuit. Filed July 24, 1970. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,686,592. Monolithic Coupled Crystal Resonator Filter Having Cross Impedance Adjusting Means. Filed Oct. 8, 1970. Patented Aug. 22, 1972. Not available NTIS.

Patent 3,687,000. Gas Operated Firearm Muzzle Attachment. Filed Apr. 30, 1970. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,687,519. Semi-Micro Absolute Transmittance and Specular Reflectance Accessory for Spectrophotometers. Filed Feb. 24, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,189. Real-Time Initial Atmospheric Gradient Measuring System. Filed May 28, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,218. Stimulated Radiation Cavity Reflector. Filed Jan. 29, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,222. Matched Ultrasonic Delay Line With Solderable Transducer Electrodes. Filed Mar. 18, 1971. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,225. Slot Line. Filed May 21, 1969. Patented Aug. 29, 1972. Not available NTIS.

Patent 3,688,556. Wear Testing Apparatus. Filed June 25, 1971. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,689,770. Exposure Control Circuit for an Electrically Shuttered Image Tube. Filed July 28, 1971. Patented Sept. 5, 1972. Not available NTIS.

Patent 3,689,948. Polyvinyl Alcohol Gel Support Pad. Filed June 9, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,170. Automatic Wind Direction Readout Device. Filed July 30, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,323. Device for Draining Ventricular Fluid in Cases of Hydrocephalus. Filed Dec. 1, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,552. Fog Dispersal. Filed Mar. 9, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,690,972. Green Flare Composition. Filed July 16, 1971. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,478. Laser Energy Monitor and Control. Filed Nov. 9, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,497. Leadless Microminiature Inductance Element With a Closed Magnetic Circuit. Filed Oct. 15, 1970. Patented Sept. 12, 1972. Not available NTIS.

Patent 3,691,902. Monitoring System for Pneumatic Cylinder. Filed July 13, 1971. Patented Sept. 19, 1972. Not available NTIS.

Patent 3,692,161. Self-Locking Clutch. Filed Oct. 14, 1970. Patented Sept. 19, 1972. Not available NTIS.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Assistant General Counsel for Patent Matters; NASA—CP–2; Washington, D.C. 20546

Patent application 367,268. High Lift Aircraft. Filed June 5, 1973. PC $3/MF $1.45.

Patent application 367,606. Self Energized Plasma Compressor. Filed June 6, 1973. PC $3/MF $1.45.

Patent application 372,142. Graded Bandgap al(X)ga (1-X)a S-Gas Solar Cell. Filed June 21, 1973. PC $3/MF $1.45.

Patent 3,730,287. Vehicle for Use in Planetary Exploration. Filed May 17, 1971. Patented May 1, 1973. Not available NTIS.

Patent 3,732,409. Counting Digital Filters. Filed Mar. 20, 1972. Patented May 8, 1973. Not available NTIS.

Patent 3,733,424. Electronic Strain Level Counter. Filed July 8, 1971. Patented May 15, 1973. Not available NTIS.

Patent 3,733,463. Temperature Control System With a Pulse Width Modulated Bridge. Filed Dec. 24, 1970. Patented May 15, 1973. Not available NTIS.

Patent 3,736,607. Life Raft Stabilizer. Filed Nov. 30, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,764. Temperature Controller for a Fluid Cooled Garment. Filed Apr. 25, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,736,938. Ophthalmic Method and Apparatus. Filed November 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,736,956. Floating Baffle To Improve Efficiency of Liquid Transfer From Tanks. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,117. Docking Structure for Spacecraft. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,121. Dual-Fuselage Aircraft Having Yawable Wing and Horizontal Stabilizer. Filed Dec. 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,181. Disconnect Unit. Filed Feb. 24, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,217. Visual Examination Apparatus. Filed July 6, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,231. High Pulse Rate High Resolution Optical Radar System. Filed Nov. 13, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,237. Monitoring Deposition of Films. Filed Nov. 18, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,639. Derivation of a Tangent Function Using an Integrated Circuit Four-Quadrant Multiplier. Filed May 17, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,676. Low Phase Noise Digital Frequency Divider. Filed Nov. 18, 1971. Patented June 4, 1973. Not available NTIS.

Patent 3,737,757. Parasitic Suppressing Circuit. Filed May 15, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,776. Two Carrier Communication System With Single Transmitter. Filed June 9, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,737,815. High-Q Bandpass Resonators Utilizing Bandstop Resonator Pairs. Filed Nov. 27, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,824. Twisted Multifilament Superconductor. Filed Aug. 11, 1972. Patented June 5, 1973. Not available NTIS.

Patent 3,737,905. Method and Apparatus for Measuring Solar Activity and Atmospheric Radiation Effects. Filed Mar. 31, 1970. Patented June 5, 1973. Not available NTIS.

Patent 3,737,912. Collapsible High Gain Antenna. Filed Sept. 16, 1971. Patented June 5, 1973. Not available NTIS.

Patent 3,740,671. Filter for Third Order Phase Locked Loops. Filed Apr. 6, 1972. Patented June 19, 1973. not available NTIS.

Patent 3,740,725. Automated Attendance Accounting System. Filed June 16, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,744,794. Restraint System for Ergometer. Filed June 25, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,972. Nondestructive Spot Test Method for Magnesium and Magnesium Alloys. Filed July 16, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,089. Protein Sterilization Method of Firefly Luciferase Using Reduced Pressure and Molecular Sieves. Filed Mar. 5, 1968. Patented July 10, 1973. Not available NTIS.

Patent 3,745,090. Method of Detecting and Counting Bacteria in Body Fluids. Filed Apr. 30, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,745,739. Apparatus and Method for Skin Packaging Articles. Filed Mar. 24, 1971. Patented July 17, 1973. Not available NTIS.

U.S. ENVIRONMENTAL PROTECTION AGENCY

Room W 513, 401 M Street SW.; Washington, D.C. 20460

Patent application 324,041. Atmospheric Fluidized Vapor Generator. Filed Jan. 16, 1973. PC $3/MF $0.95.

[FR Doc. 73-23536; Filed 11-6-73; 8:45 am]

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF NOVEMBER 10, 1973

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	11-03-72
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	8-09-72
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	8-08-72
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-18-72
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	5-18-72
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	4-04-73
SPECIAL LAWS ADMINISTRATION, GROUP 220—R. L. CAMPBELL, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	12-07-72
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-08-72
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-17-72
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices, Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	11-30-72
DESIGNS, GROUP 290—R. L. CAMPBELL, Director. Industrial Arts; Household, Personal and Fine Arts.	2-11-72
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-02-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus: Plastic Block and Earthenware Apparatus: Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-05-72
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—A. RUEGG, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	1-04-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—M. M. NEWMAN, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-11-73
MISCELLANEOUS CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—T. J. HICKEY, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	9-21-72

Expiration of patents: The patents within the range of numbers indicated below expire during November 1973, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 2,769,173 to 2,772,414, inclusive
Plant Patents ..... Numbers 1,526 to 1,531, inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED DECEMBER 4, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

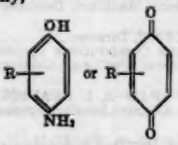
Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent Office makes no assertion as to the novelty of the disclosed subject matter.

T917,001
SYNTHESIS OF CHLORINATED BALLASTED QUINONES

Albert E. Anderson, Jr., Penfield, and Ilmari F. Salminen, Rochester, N.Y. (both % Eastman Kodak Company, Rochester, N.Y. 14650)

Filed Dec. 2, 1971, Ser. No. 204,295
Int. Cl. C07c *49/64*
U.S. Cl. 260—396 R
No Drawing. 7 Pages Specification

Chlorinated, ballasted quinones are prepared in one step in high purity and high yield by the oxidative chlorination of the corresponding ballasted p-aminophenol or quinone. Specifically,



wherein R=alkyl or aryl of at least 8 carbon atoms, is treated with chlorine in the presence of a solvent mixture of acetic acid and water. The solvent mixture is preferably 70–90% by volume of acetic acid. The process is preferably carried out at a temperature of from 80–120° C. 2,3,6-trichloro-5-(n - pentadecyl)-1,4-benzoquinone is prepared by employing either 3-(n-pentadecyl)-4-aminophenol or 3-(n-pentadecyl-1,4-benzoquinone) as the starting reactant. The chlorinated ballasted quinones thus prepared are useful in preparing dye-releasing or dye precursor-releasing compounds for image transfer systems.

T917,002
SEWING THREAD HAVING A SILICONE LUBRICANT AND FLAME RETARDANT ON THE SURFACE OF THREAD

Robert R. Sanders, 3289 Ashley St., Kingsport, Tenn. 37664

Filed June 15, 1972, Ser. No. 263,065
Int. Cl. C09d *1/00*
U.S. Cl. 117—136
No Drawing. 7 Pages Specification

Disclosed is a sewing thread comprised of a synthetic thermoplastic polymer, the sewing thread having on its surface a silicone lubricant and an organic bromine-containing flame retardant. More specifically, the sewing thread has on its surface, based on the weight of the sewing thread, from about 0.3 to about 6 weight percent silicone and, based on the weight of the sewing thread, a sufficient quantity of an organic bromine-containing flame retarder to result in about 0.1 to about 2 weight percent bromine on the surface of the sewing thread. Examples of the many kinds of synthetic thermoplastic polymers that are within the scope of this invention include cellulose acetate, polyamide, polyester, cellulose triacetate, acrylic and modacrylic. In a preferred embodiment the synthetic thermoplastic polymer is polyester and in one especially preferred embodiment the polyester is poly(ethylene terephthalate). The silicone lubricant used in this invention is the type normally employed to lubricate sewing thread and chemically is poly(dimethyl siloxane) having a molecular weight making it suitable as a sewing thread lubricant. The flame retarder used in this invention can be described as a bromine-containing flame retarder which contains, based on the weight of the organic bromine-containing flame retarder, from about 40 to about 85% of bromine by weight and preferably contains from about 60 to about 80% bromine. Flame retarders that contain both phosphorus and bromine are particularly desirable in this invention. Suitable flame retarders are represented by bis(bromochloropropyl) bromochloropropyl phosphonate, tris(2,3 - dibromopropyl) phosphate, tris(dibromophenyl) phosphate and di(2,3-dibromopropyl) tribromophenyl phosphate. The sewing thread of this invention advantageously exhibits desirable sewability due to the silicone lubricant and also imparts desirable flame retardancy to the sewn garment due to the organic bromine-containing flame retarder.

T917,003
PHOTOGRAPHIC PROCESS AND PRODUCT

Charles A. Goffe, Robert D. Lindholm, and Peter M. Stacy, all % Eastman Kodak Company, Rochester, N.Y. 14650

Filed Sept. 28, 1972, Ser. No. 293,289
Int. Cl. G03c *5/24, 5/26, 1/76*
U.S. Cl. 96—48 RP
No Drawing. 9 Pages Specification

An element comprising a halogen acceptor coated on a transparent support contacted with a second element comprising a print-out photographic emulsion on a separate support provides an improved print-out photographic product. An improved print-out photographic process is provided by imagewise exposing the product to light and separating the two elements. A stable, visible image results without the need of a subsequent photo-development or heat stabilization step.

T917,004
PROCESS FOR THE CHLORINATION OF POLYOLEFINS

Warren L. Young, 9542 E. Damuth Place, Baton Rouge, La. 70815; John T. Holloway, 4121 Florida St., Zachary, La. 70791; and James S. Kennedy, 463 W. Chalfont St., Baton Rouge, La. 70815

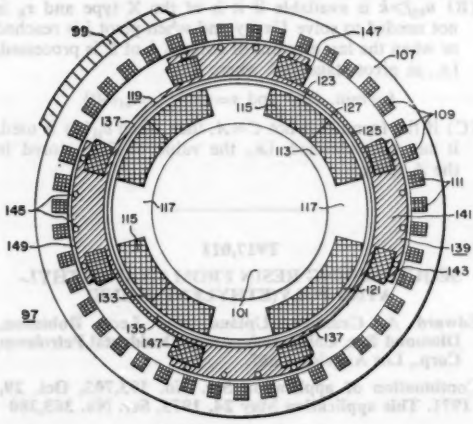
Filed Dec. 11, 1972, Ser. No. 313,765
Int. Cl. C08f *45/04*
U.S. Cl. 260—29.6 XA
No Drawing. 12 Pages Specification

A process for the chlorination of essentially linear polyolefins in suspension in an inert liquid wherein such chlorination takes place at least in part at a temperature above the agglomeration temperature of the polyolefin being chlorinated and in the presence of an inert filler material, e.g., a platy talc, to control the particle size of the chlorinated product, wherein the improvement consists of adding the inert filler material during that portion of the chlorination reaction which is conducted at or above the agglomeration temperature of the polyolefin. Utilization of this process permits the obtainment of chlorinated polyolefin of small particle size, e.g., less than 600 microns, while utilizing as little as 4 parts of inert filler per 100 parts of polyolefin.

T917,005
PIPE CEMENT
Everett Walter Knight, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 15, 1972, Ser. No. 315,562
Int. Cl. C08f *29/18, 45/04, 45/28*
U.S. Cl. 260—30.4 R
No Drawing. 8 Pages Specification

A cement composition is provided for PVC and CPVC pipes which contain from about 10 to about 18 parts by weight of pipe grade PVC resin or pipe grade CPVC resin, from about 55 to about 75 parts by weight of tetrahydrofuran, from about 3 to about 9 parts by weight of a high boiling solvent, from about 1 to about 7 parts by weight of a micro colloidal silica powder and from about 5 to about 25 parts by weight of a nonsolvent for the pipe grade PVC and/or CPVC resins.

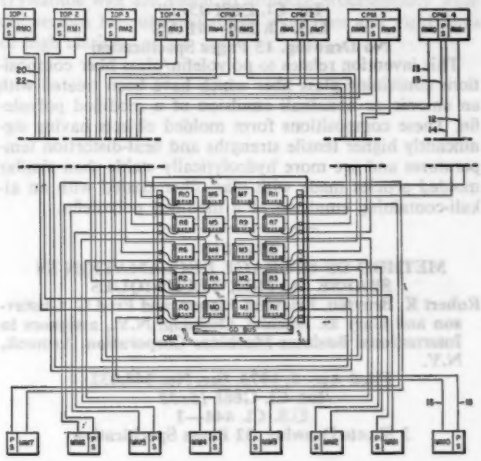
T917,006
DYNAMOELECTRIC MACHINERY UTILIZING SUPERCONDUCTIVE WINDINGS
Cecil J. Mole, Monroeville, and Robert F. Edwards, Murrysville, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Jan. 29, 1973, Ser. No. 327,540
Int. Cl. H02k *9/00*
U.S. Cl. 310—52
4 Sheets Drawing. 36 Pages Specification



Iron or other ferromagnetic material is utilized in the magnetic circuit of dynamoelectric machines having superconductive field or excitation windings. In DC machines, a stationary salient pole field structure with a superconductive main field winding is utilized. An armature winding is wound about a smooth rotor. In AC machines, a ferromagnetic structure that encloses and rotates with a superconductive excitation winding is utilized. The ferromagnetic structure may include either salient poles interconnected by ferromagnetic shunts or a slotted or toothed rotor.

T917,007
CENTRALIZED MEMORY ACCESS MODULE FOR A DATA PROCESSING SYSTEM
Douglas E. Hair and John A. Bonnes, both of Univac Park, P.O. Box 3525, St. Paul, Minn. 55165
Filed Feb. 14, 1973, Ser. No. 332,526
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5
14 Sheets Drawing. 25 Pages Specification

A Centralized Memory Access Module (CMA) that provides a means whereby the associated Data Processing Subsystem (DPS) configuration having up to twelve Requester Modules (RM0–RM11) may be multiplexed or interfaced with up to eight Memory Modules (MM0–MM7) is disclosed. The CMA is comprised of an array of groups of printed circuit cards that are mounted on a single panel for back panel wiring. The CMA is comprised of twelve similar Requester Groups R0–R11 and eight similar Memory Groups M0–M7. Each Requester Module and its associated power supply PS are wired to only its associated Requester Group in the CMA, e.g., RM11 is wired to only R11 in the CMA, and each Memory Module and its associated power supply PS are wired to only its associated Memory Group in the CMA, e.g., MM0 is wired to only M0 in the CMA. Thus, each Requester Module and its associated Requester Group in



the CMA and each Memory Module and its associated Memory Group in the CMA are functionally independent of each other such that power failure in one of the modules affects only its associated group in the CMA whereby failure of one or more but not all of the modules does not cause DPS failure. The logic design of the groups that make up the CMA isolate all data, address, control and power signals from each other group and from the other modules while having a common ground bus and intercouples data, address and control signals between one Requester Module and one Memory Module, all under control of the associated Requester Group and Memory Group.

T917,008
HOT MELT ADHESIVE CONTAINING HYDROGENATED AROMATIC HYDROCARBON RESIN TACKIFIER
Robert G. Fajans, Newark, Del., assignor to Hercules Incorporated, Wilmington, Del.
Filed Mar. 9, 1973, Ser. No. 339,693
Int. Cl. C08f *29/12*
U.S. Cl. 260—28.5 A
No Drawing. 8 Pages Specification

Hot melt adhesive compositions comprise a thermoplastic component and a tackifier comprising hydrogenated aromatic hydrocarbon petroleum resins. The thermoplastic component can be low molecular weight polyethylene, amorphous polypropylene, paraffin wax, styrene-butadiene copolymers, styrene-isoprene-styrene block copolymers, polyvinyl acetate, and is preferably an ethylene-vinyl acetate copolymer.

The hydrogenated aromatic hydrocarbon petroleum resins used as the tackifier are derived from polymerized cracked naphtha fractions boiling in the range of from about −10° C. to about 280° C. and containing polymerizable unsaturated hydrocarbons of which at least 50%

by weight consists of a mixture of aromatic olefins, cyclic olefins and cyclic diolefins.

Hot melt adhesives are used to bond wood, paper, plastics, textiles, etc.

T917,009

THERMOPLASTIC POLYOLEFIN MOLDING COMPOSITIONS CONTAINING GLASS FIBERS WHICH HAVE BEEN TREATED WITH AN ANIONIC EMULSION OF A MODIFIED POLYOLEFIN

Max F. Meyer, Jr., 509 Altamont 37663; Frederick B. Joyner, 404 Meadow Lane 37663; and Willis C. Wooten, Jr., 521 Lakewood Road 37660, all of Kingsport, Tenn.

Filed Apr. 2, 1973, Ser. No. 347,003
Int. Cl. C08f *45/10*
U.S. Cl. 260—41 AG
No Drawing. 15 Pages Specification

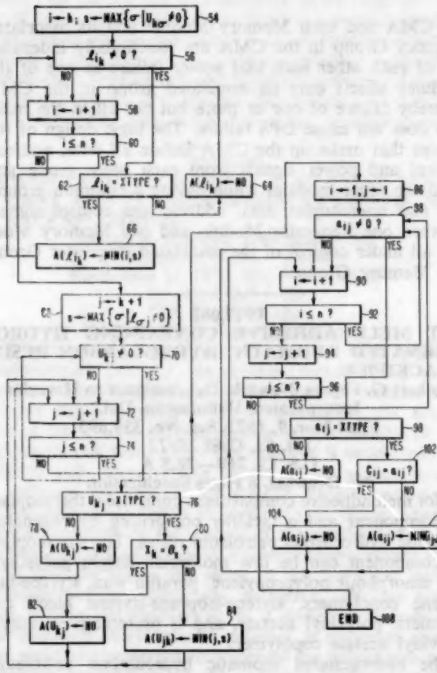
This invention relates to polyolefin/glass fiber compositions containing glass fiber which have been treated with an anionic or nonalkali emulsion of a modified polyolefin. These compositions form molded objects having significantly higher tensile strengths and heat-distortion temperatures and are more hydrolytically stable than similar molded articles made with glass fiber coated with an alkali-containing emulsion of a modified polyolefin.

T917,010

METHOD OF STORAGE RECLAMATION IN SPARSE MATRIX TECHNIQUES

Robert K. Brayton, Briarcliff Manor, and Fred G. Gustavson and Gary D. Hachtel, Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 6, 1973, Ser. No. 348,832
Int. Cl. G06f *15/32*
U.S. Cl. 444—1
3 Sheets Drawing. 32 Pages Specification



A novel method for optimally reclaiming X storage in the 1–2–3 GNSO technique is set forth. The method defines

(1) the minimal storage which is necessary to carry out the 1–2–3 GNSO technique

(2) defines the minimal storage necessary to carry out variability-type Gaussian elimination by looping type code

(3) reduces the amount of code necessary for large problems as the base registers need only span the minimal set of C values

(4) defines the values of the A matrix which can be used for C storage

(5) realizes effects 1–4 for the case of four or more distinct variability types appearing as arguments in the coefficients of the matrix A.

In carrying out the method, assuming that step k of the OPTORD algorithm, as described in the publication of G. D. Hachtel, R. K. Brayton and F. G. Gustavson, "The Sparse Tableau Approach to Network Analysis and Design," IEEE Transactions on Circuit Theory, January 1971, pp. 101–113, has been attained whereby $A^{(k)}$ is had, then a pivot is selected and $A^{(k)}$ is updated to $A^{(k+1)}$ by performing an outer product operation. The following rules are then valid

(A) $l_{ik}i \geq k$ is available if it is of the X type and pivot step i has been reached or if the last element in row k of U has been processed, i.e., l_{ik} is available at pivot step $I \geq k$ where I=min. (i,s) and s=max. $\{l/U_{kl} \neq 0\}$

(B) $u_{kj}j > k$ is available if it is of the X type and x_k is not needed to solve $Ux=y$ and when pivot j is reached or when the last element of column k of L is processed, i.e., at pivot stage $j > k$ where

$$k=\text{min. } (j,s) \text{ and } s=\text{max. } \{\sigma/l_{\sigma j} \neq 0\}$$

(C) if the formula is not $C=A$, then when $a_{ij}(x)$ is used, it can be reclaimed, i.e., the value of C is stored in the A space.

T917,011

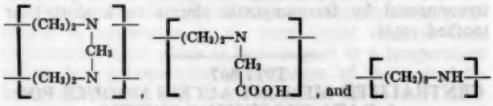
SEQUESTERING RESIN FROM CYANOETHYLATED POLY(ETHYLENE IMINE)

Edward A. Grannen, Upland, and Leon Robinson, Diamond Bar, Calif., assignors to Occidental Petroleum Corp., Los Angeles, Calif.

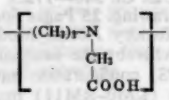
Continuation of application Ser. No. 193,703, Oct. 29, 1971. This application May 24, 1973, Ser. No. 363,380

Int. Cl. C08g *33/08*
U.S. Cl. 260—2.2 C
No Drawing. 12 Pages Specification

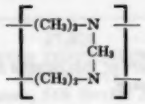
This application describes a substantially water-insoluble, cross-linked sequestering resin having a plurality of units in arbitrary sequence selected from the group consisting of



wherein at least 15% of the units are



and about 15% of the units are



Ethyleneimine is formed into a low molecular weight branched pre-polymer in an acidic aqueous solution. This is then cyanoethylated and cross-linked in a strongly acid solution of formaldehyde and hydrocyanic acid. The resulting cross-linked polymer is hydrolyzed to provide active sequestering groups >N—CH_2—COOH on the chain.

T917,012
PVC-CONTAINING BLENDS AND FILMS THEREOF

Tibor G. Mahr, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of application Ser. No. 321,577, Jan. 8, 1973, which is a continuation of application Ser. No. 169,798, Aug. 6, 1971. This application June 11, 1973, Ser. No. 369,114

Int. Cl. C08f *45/52*
U.S. Cl. 260—28.5 D
No Drawing. 10 Pages Specification

Improvement in blends of PVC and ethylene/carbon monoxide copolymers wherein minor amounts of an aliphatic petroleum hydrocarbon tackifying resin or microcrystalline wax are added to promote processability without serious loss of mechanical properties and yield films of high clarity.

REISSUES

DECEMBER 4, 1973

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

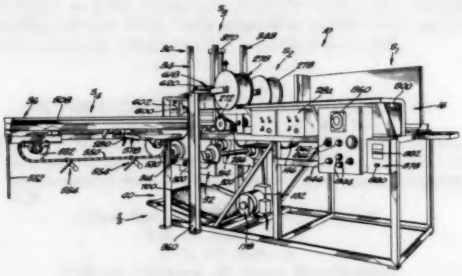
27,825
BOTTOM SEALING MACHINE

Lawrence C. Roesner, Anaheim, and Lenard E. Moen, Whittier, Calif., assignors to Precision Produce Specialties Inc., and Calavo Growers of Calif., fractional part interest to each

Original No. 3,342,116, dated Sept. 19, 1967, Ser. No. 428,462, Jan. 27, 1965. Application for reissue Feb. 7, 1972, Ser. No. 224,351

Int. Cl. B31b *17/60*

U.S. Cl. 93—55 R **50 Claims**



A method of and a machine for forming a container from a pair of preformed end panels and a preformed blank having a central rectangular bottom wall forming panel, hinged side wall forming panels along opposite sides of the bottom wall forming panel, and projecting end panel joining flaps along the edges of the bottom and side wall forming panels, the method and machine operation involving adhesively coating one side of the blank along the flaps thereof, relatively moving the end panels and blank to positions wherein the end panels engage the bottom wall forming panel of the blank along and just inward of the hinge lines of its flaps, and then simultaneously folding the side wall forming panels of the blanks upwardly about the ends of the end panels and folding the flaps of the blank inwardly against the outer surfaces of the end panels to adhesively join the flaps to the end panels.

27,826
MARINE PROPULSION DEVICE

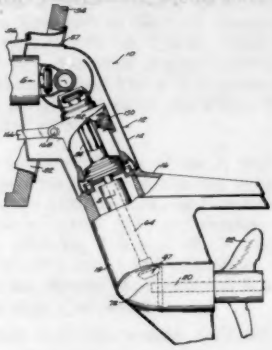
John A. Langley, Zion, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Original No. 3,589,204, dated June 29, 1971, Ser. No. 855,846, Sept. 8, 1969. Application for reissue June 12, 1972, Ser. No. 261,639

Int. Cl. B63h *5/12*; **F16h** *35/00*

U.S. Cl. 74—385 **32 Claims**

Disclosed herein is a marine propulsion device which includes a drive shaft housing having upper and lower housing sections, and in which the upper housing section is rotatably supported for movement about a horizontal tilt axis by oppositely extending trunnions which are received in inwardly open coaxial apertures in spaced supporting members fixed to the boat hull. Power is transferred from the engine output shaft to a drive shaft by a horizontal cross shaft which is rotatably supported in coaxial relation to the tilt axis and between the trunnions by a gear case having first and second gear case sections. The first gear case section is fixed to the boat hull. The second gear case section is integral with the upper end of



the drive shaft housing. Steering is afforded by rotating the lower drive shaft housing section by a steering linkage which includes a worm wheel sector on the lower housing section and a worm gear which is rotated by a drive which includes a stub shaft rotatably supported within one of the trunnions.

27,827
HEATED OR COOLED CEILING OR WALL STRUCTURES

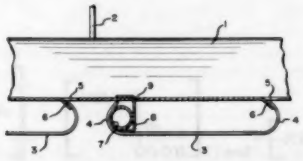
Pierre Alfred Jean Ledoux, Paris, France, assignor to Hunter Douglas International N.V., Willemstad, Curacao

Original No. 3,516,486, dated June 23, 1970, Ser. No. 722,487, Apr. 18, 1968. Application for reissue June 22, 1972, Ser. No. 265,357

Claims priority, application France, Apr. 19, 1967, 103,305

Int. Cl. F24h *3/02*

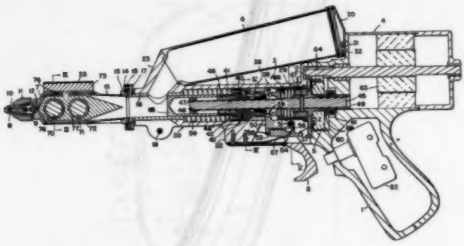
U.S. Cl. 165—54 **5 Claims**



The present invention relates to panel ceiling and wall structures comprising metal elements constituting the visible ceiling structure and comprising supporting bars or channels upon which said elements are clipped. These supporting channels are hung by means of hanger straps from the ceiling of the building. The invention relates more specifically to the type of ceiling in which the elements which are clipped on the supporting channels

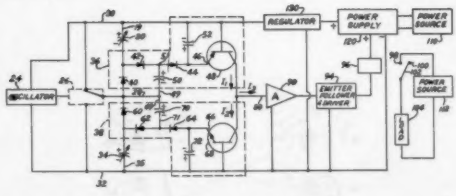
are shaped as panels with upturned longitudinal edges thus leaving a free space between their interior wall and the supporting channels which constitute the support means for said panels.

27,828
APPLICATOR FOR DISPENSING A MOLTEN MATERIAL
Albert R. Salonen, 560 Baxter Ave., Victoria, British Columbia, Canada
Original No. 3,550,815, dated Dec. 29, 1970, Ser. No. 657,983, Aug. 2, 1967. Application for reissue Nov. 26, 1971, Ser. No. 202,078
Int. Cl. B67d *5/62*
U.S. Cl. 222—146 HE 20 Claims



An applicator for dispensing a molten material which includes a container for material to be melted; a heating chamber forward of and communicating with the container in which chamber the said material is melted; one or more nozzles forward of and communicating with the heating chamber to supply the molten material; means operable to force material in the container through the heating chamber and subsequently through the or each nozzle; and motor means for operating said material forcing means. The applicator is particularly suitable for hand-held operation.

27,829
CAPACITANCE-MEASURING TECHNIQUES
Floyd L. Tiffany, Marshalltown, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa
Original No. 3,543,046, dated Nov. 24, 1970, Ser. No. 815,795, Apr. 14, 1969. Application for reissue Sept. 21, 1972, Ser. No. 291,052
Int. Cl. G01f *31/00*
U.S. Cl. 307—118 24 Claims



The relative capacitance of a first capacitor may be accurately measured by providing a second reference capacitor and a switch that cyclically charges and discharges the first and second capacitors at a predetermined rate. The cyclical charging and discharging of the first capacitor produces a first current that is amplified by a first amplifier. The cyclical charging and discharging of the second reference capacitor produces a second current that is amplified by a second amplifier. The first and second currents are algebraically summed and conducted to a comparison device that indicates the relative difference between the capacitance of the first and second capacitors by sensing the magnitude of the summed currents.

27,830
MULTIFILAMENT CONDUCTOR
Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Original No. 3,513,251, dated May 19, 1970, Ser. No. 814,198, Apr. 7, 1969, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of Ser. No. 730,933, May 21, 1968, both now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,786
Int. Cl. H01b *5/08*
U.S. Cl. 174—128 22 Claims

An insulated multifilament conductor prepared from aluminum alloy having an electrical conductivity of at least sixty-one percent (61%) based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional EC wire of the same tensile strength. The aluminum alloy wires contain substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron to an alloy mass containing less than about 99.70 weight percent aluminum, no more than 0.15 weight percent silicon, and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals and annealed after the final draw. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent (61%) of the International Annealed Copper Standard, and increased bendability and fatigue resistance.

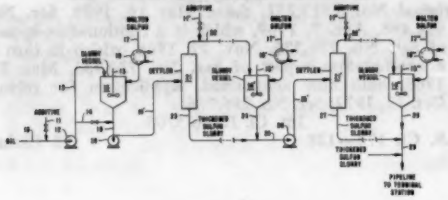
27,831
OPERATING TECHNIQUE FOR SULFUR SLURRY PIPELINE

Leonard F. Bolger, Clarkson, Ontario, Canada, assignor to Shell Oil Company, New York, N.Y.

Original No. 3,547,497, dated Dec. 15, 1970, Ser. No. 813,994, Apr. 7, 1969. Application for reissue Dec. 21, 1972, Ser. No. 317,450

Int. Cl. B65g *53/30*

U.S. Cl. 302—66 **11 Claims**



An improved method of making concentrated sulfur-oil slurry for pipeline transportation comprising increasing the sulfur content in the process of making a slurry by increment addition of fresh molten sulfur into a preformed slurry of low sulfur concentration until a concentrated sulfur-oil slurry is obtained.

27,832
SOLID INSULATED CONDUCTOR

Roger J. Schoerner, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.

Original No. 3,513,250, dated May 19, 1970, Ser. No. 814,182, Apr. 7, 1969, which is a continuation-in-part of Ser. No. 795,055, Jan. 29, 1969, which is a continuation-in-part of Ser. No. 779,376, Nov. 27, 1968, which in turn is a continuation-in-part of Ser. No. 730,933, May 21, 1968, all now abandoned. Application for reissue Oct. 12, 1972, Ser. No. 296,824

Int. Cl. H01b *7/00*

U.S. Cl. 174—110 R **12 Claims**

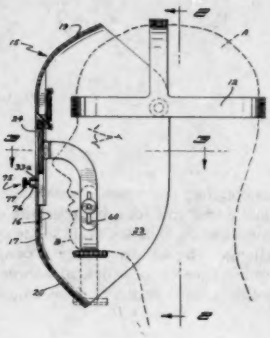
A solid insulated conductor prepared from an aluminum alloy wire having an electrical conductivity of at least sixty-one percent based on the International Annealed Copper Standard and unexpected properties of increased ultimate elongation, bendability and fatigue resistance when compared to conventional FC wire of the same tensile strength. The aluminum alloy wire contains substantially evenly distributed iron aluminate inclusions in a concentration produced by the addition of more than about 0.30 weight percent iron and no more than 0.15 weight percent silicon to an alloy mass containing less than about 99.70 weight percent aluminum and trace quantities of conventional impurities normally found within a commercial aluminum alloy. The substantially evenly distributed iron aluminate inclusions are obtained by continuously casting an alloy consisting essentially of less than about 99.70 weight percent aluminum, more than 0.30 weight percent iron, no more than 0.15 weight percent silicon and trace quantities of typical impurities to form a continuous aluminum alloy bar, hot-working the bar substantially immediately after casting in substantially that condition in which the bar is cast to form continuous rod which is subsequently drawn into wire without intermediate anneals, annealed after the final draw and insulated. After annealing, the wire has the aforementioned novel and unexpected properties of increased ultimate elongation, electrical conductivity of at least sixty-one percent of the International Annealed Copper Standard and increased bendability and fatigue resistance.

PATENTS

GRANTED DECEMBER 4, 1973

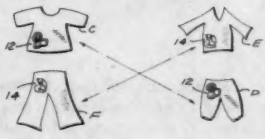
GENERAL AND MECHANICAL

3,775,774
LENS HOLDING STRUCTURE FOR WELDER'S HELMET
Edward B. Herman, Rt. 4 Box 239, Excelsior, Minn.
Filed July 20, 1972, Ser. No. 273,487
Int. Cl. A61f 9/06
U.S. Cl. 2—8 **2 Claims**



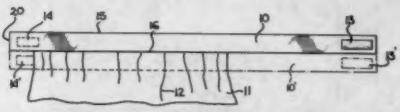
An improvement in the lens holding structure of a welder's helmet consisting of spring means to normally position a lens to overlie the lens opening of the helmet and means operable by the jaw of the operator to move said lens away from said lens opening.

3,775,775
DESIGN CODING FOR COORDINATED GARMENT SETS
Anthony Mazzenga, Commack, N.Y., assignor to Garan, Incorporated, New York, N.Y.
Filed Sept. 18, 1972, Ser. No. 290,274
Int. Cl. A41d 11/00
U.S. Cl. 2—80 **5 Claims**



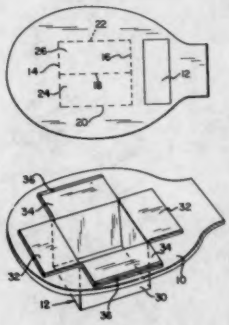
Coordinated sets of wearing apparel wherein identical identifying indicia are applied to each garment of the set in order to facilitate selection of the appropriate matching garment.

3,775,776
NECKPIECE
Charles A. Smith, Jr., Box 574 Chenago Lake Rd., Norwich, N.Y.
Filed Feb. 5, 1973, Ser. No. 329,439
Int. Cl. A41d 25/02
U.S. Cl. 2—149 **2 Claims**



A neckpiecé or cravat which includes an elongated neck-encircling band and a body piece is disclosed. The band, when folded once upon the body piece, may be fastened around the neck of a wearer without exposing the band at the front of the neckpiece and without the fasteners being exposed.

3,775,777
STOOL SPECIMEN TEST KIT
Timothy Roberts, Jr., SSN 398-14-4349, USAID/CSO, APO San Francisco, Calif.
Continuation-in-part of Ser. No. 159,268, July 2, 1971, abandoned. This application Nov. 23, 1971, Ser. No. 201,287
Int. Cl. A87k 17/00
U.S. Cl. 4—1 **8 Claims**



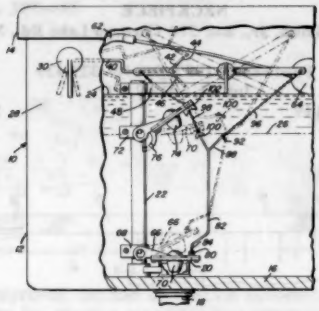
A stool specimen test kit, including; a generally-flat support means of a size and shape to fit over the bowl of a toilet and to be held in such position by the seat of the toilet; a perforated section in the support adapted to be punched out to form a centrally-disposed opening therein; a plastic container of a size and shape to fit in the opening of the support and having at least two closure flaps adapted to be folded outwardly to lie flat on the support and suspend the container in the opening of the support; and sealing means on the flaps of the container to seal the container after use.

3,775,778

TOILET FLUSH TANK MECHANISM

Joe Y. Lee, Box 446, Dumas, Ark.

Filed Apr. 7, 1972, Ser. No. 241,980
Int. Cl. E03d 1/34, 5/02, 5/10
U.S. Cl. 4—67 A 5 Claims



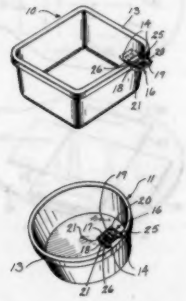
A mechanism operative to selectively discharge substantially all or only a major portion of the water within the flush tank of a toilet. The mechanism includes a single operator shiftable in a first direction from a rest position for discharging substantially all of the water in the flush tank and in the opposite direction for discharging only a minor portion of the water within the flush tank. The mechanism is constructed whereby it may be readily incorporated into existing flush tank mechanisms by the addition of certain components and substitution of other components for some of the components of conventional flush tank mechanisms.

3,775,779

WASH BASIN AND SOAP DISH COMBINATIONS

Terry J. Kohler, Sheboygan, Wis., assignor to The Vollrath Co., Sheboygan, Wis.

Filed Jan. 28, 1972, Ser. No. 221,575
Int. Cl. A47k 1/04
U.S. Cl. 4—166 5 Claims



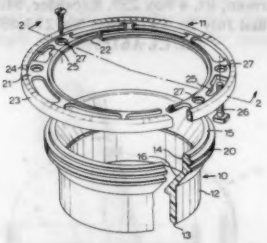
A plastic wash basin designed to have a soap container or dish removably snapped thereon, said wash basin being either rectangular, round, or any other desired contour, and said soap dish having integral locking means thereon which permits the intentional removal of said dish when desired but which prevents the same from becoming inadvertently or accidentally disengaged from the basin.

3,775,780

WATER CLOSET COUPLING

James Eric McEwen, London, Ontario, Canada, assignor to Multi Fittings Limited, London, Ontario, Canada

Filed July 17, 1972, Ser. No. 272,653
Int. Cl. E03d 11/13; F16l 15/00, 5/00
U.S. Cl. 4—252 R 9 Claims



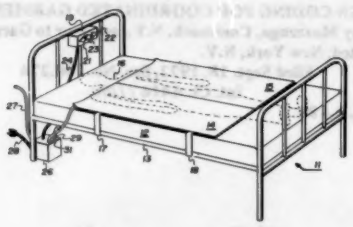
A water closet coupling comprises a plastic annular connector providing flow communication between the drainage outlet of a water closet and an installed drain waste conduit, and a radial securing flange. The securing flange is connected to the annular connector by means of a helically threaded connection which permits vertical and rotational adjustment of the flange.

3,775,781

PATIENT TURNING APPARATUS

Joan F. Bruno, 2668 6th Ave., and Richard E. Pietras, 6917 Lipman St., both of San Diego, Calif.

Filed Oct. 15, 1971, Ser. No. 189,702
Int. Cl. A61g 7/10, 7/00
U.S. Cl. 5—61 3 Claims



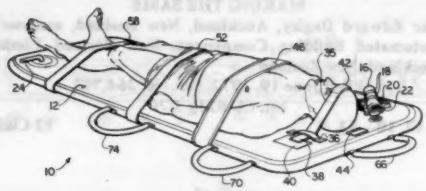
A patient turning apparatus, for operation by a patient, in which a two-sectioned air mattress is placed on a patient's bed having a width generally conforming to the width of the bed and a length terminating at the patient's shoulders and calves. Each section of the air mattress is coupled through a different solenoid operated valve to a source of air pressure. A switch box disposed above the patient's head, having coded buttons, operates the solenoids and allows the patient to inflate either side, effecting a turn either to the left or right, with a third control for exhausting both sections of the air mattress when desired.

3,775,782

INFLATABLE AQUATIC RESCUE BOARD AND METHOD OF RESCUE

Charles A. Rice, and Michael L. Foust, both of Chambersburg, Pa., assignors to R. F. Inc., Grantsville, W. Va.

Filed Mar. 30, 1972, Ser. No. 239,732
Int. Cl. A47b *83/04*
U.S. Cl. 5—82 9 Claims



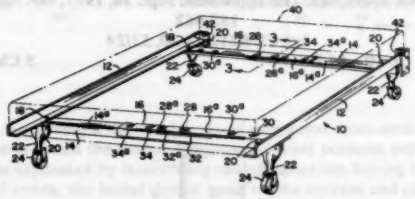
An inflatable aquatic rescue board is provided having particular advantage in rescuing persons who have sustained injuries while swimming or diving, and who frequently must be held rigid to prevent further injuries while being removed from the water. Prior to inflation, the rescue board is quite flexible, permitting it to be rolled into a compact bundle for storage. Then, upon activation of a self-contained compressed gas supply, the rescue board quickly becomes stiff and bouyant to form an ideal aquatic stretcher. The board comprises a planar structure having two impervious parallel broad faces constrained to a maximum separation by internal members extending therebetween. Transverse reinforcements provide additional rigidity and two longitudinally extending flat springs facilitate unrolling of the rescue board under water during rescue. Strategically placed straps are provided for securing an injured person to the board and handles are placed for maximum ease of removal from water and transportation to competent medical treatment.

3,775,783

SELF-LOCK TYPE ADJUSTABLE WIDTH BEDFRAME

Richard A. Miller, Bedford Heights, Ohio, assignor to Rusco Industries, Inc., Los Angeles, Calif.

Filed Aug. 19, 1971, Ser. No. 173,107
Int. Cl. A47c *19/04*
U.S. Cl. 5—201 4 Claims



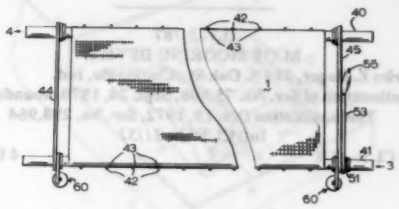
A bedframe which may be easily adjusted for use as a single, double, or queen size bed. The frame has a pair of side rails and first and second cross rail sections connected to each side rail. One of the cross rail sections has a pair of upwardly projecting shoulder rivets and the other side rail section has, preferably, three pairs of L-shaped notches with the notches of each pair being spaced apart by a distance equal to the separation of the rivets of the other cross section and with the pairs being separated by distances equal to the differences in the desired width of the frame.

3,775,784

STRETCHER

Cyril Harold Fry, 9055 West 64th Place, Arvada, Colo.

Filed Dec. 30, 1971, Ser. No. 213,972
Int. Cl. A47b *83/04*; A61g *1/02*
U.S. Cl. 5—81 R 3 Claims



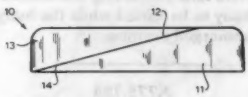
A stretcher disposable under a prone body without moving or disturbing the body including a first frame upon which a sheet is wound carried upon a second frame about which an endless belt is wound. As the frames are pulled under the body, the sheet is unwound beneath the body with no longitudinal movement of the unwinding sheet with respect to the body or the ground.

3,775,785

ADJUSTABLE PILLOW APPARATUS

Theodore H. Mittendorf, Rt. 1 Box 102, Tavares, Fla.

Filed Dec. 26, 1972, Ser. No. 318,022
Int. Cl. A47c *27/22*
U.S. Cl. 5—341 2 Claims



An adjustable pillow apparatus having a pair of pillow sections to form a pillow, each pillow section having a wedge shaped portion so that the pillow sections can be adjusted along their wedge shaped portions to vary the shape of the pillow. Attachment members attached to each pillow section allow the pillow sections to be removably attached at any desired position along the angled surfaces of the wedge shaped portions of the pillow sections.

3,775,786

BIOLOGICAL PRODUCT AND PROCESS FOR TREATING AND RESTORING HONEYCOMBS INFECTED WITH BACILLUS LARVAE (AMERICAN FOULBROOD DISEASE)

Charles P. Reinert, Garvin, and Samuel F. Tutt, Lake Wilson, both of Minn., assignors to Winona Research, Inc., Winona, Minn.

Filed Feb. 14, 1972, Ser. No. 226,196
Int. Cl. A01k *51/00*
U.S. Cl. 6—12 R 5 Claims

A biological product and process for treating and restoring honeycombs infected with American Foulbrood disease (Bacilus larvae) includes the steps of applying a solution of water and living Penicillin mold to a diseased honeycomb. The solution containing the Penicillin mold is applied to the honeycomb by dipping the honeycomb in the solution, or by spraying the solution onthe honeycomb so that substantially the entire surface of the honeycomb is contacted by the solution. The treated honeycomb is allowed to remain at room

temperature (about 70° to 80°F.) for a period of time sufficient to permit good growth of the Penicillin mold so that the mold substantially covers the honeycomb. The treated honeycomb is then placed in a bee hive where the mold dries, and the scale and foreign matter is then easily and effectively removed by the bees so that each cell has a clean interior wax surface.

3,775,787

BUOY MOORING DEVICE

Charles E. Rager, 214 S. Oak St., Clarksville, Ind.

Continuation of Ser. No. 75,008, Sept. 24, 1970, abandoned. This application Oct. 19, 1972, Ser. No. 298,964

Int. Cl. B63b *21/52*

U.S. Cl. 9—8 R **4 Claims**

A buoy mooring device comprising a counterweighted frame slidable along a cable which extends from anchor to buoy. The counterweight and frame travel on the cable as the water level rises and falls permitting the distance between the anchor and the buoy to be varied while the buoy is retained in a stabilized, unsubmerged position.

3,775,788

INFLATABLE SWIMMING SUPPORTS

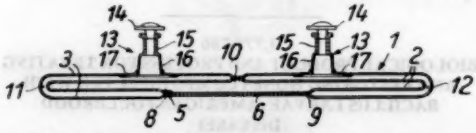
Bernhard Markwitz, Broderswеb 9/10, Hamburg, Germany

Filed Nov. 15, 1971, Ser. No. 198,561

Claims priority, application Germany, Feb. 19, 1971, P 21 07 979.8

Int. Cl. B63c *9/16*

U.S. Cl. 9—344 **1 Claim**



An inflatable swimming support for the upper arm consisting, in the uninflated condition, of two superimposed cylindrical annular parts connected along their edges, made of a flexible water-and air-tight material, wherein a part of the circumference which rests on the inside of the upper arm when the ring is fitted is formed as a non-inflatable surface, and the diameter of the uninflated swimming support, the circumference of which is about double its length in the uninflated state, is about twice as large as the mean diameter of the upper arm of a person for whom the swimming support is intended while, in the longitudinal direction of the upper arm, the width of the swimming support corresponds substantially to the length of the upper arm between the armpit and elbow bend of the person. The two parts of the swimming support are connected in the zone opposite the noninflatable surface along a line which divides the inflatable portion of the swimming support into two substantially equal inflatable chambers, each chamber being adapted to be inflated through a nipple which is closable by means of a removable plug.

3,775,789

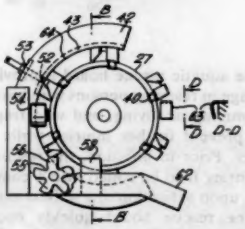
TIMBER CONNECTORS AND/OR MACHINES FOR MAKING THE SAME

Edgar Edward Dagley, Auckland, New Zealand, assignor to Automated Building Components New Zealand Limited, Auckland, New Zealand

Filed June 19, 1972, Ser. No. 264,702

Int. Cl. B21g *3/20*

U.S. Cl. 10—52 **12 Claims**



A machine for making timber connectors from wire having a central portion with spikes turned at right angles to the central portion and mutually at right angles to each other, has cutting means which cuts lengths of wire from a roll and deposits the wire in forming dies and forms the wire to the required shape by rotation of a rotary head, with the ends of the wire being manipulated automatically so that the points of the wire are straightened, the spikes turned to form a U shape and one spike is then twisted relative to the other to take up the aforesaid right angled relationship and the connectors then discharged.

3,775,790

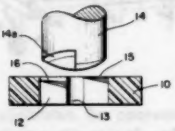
FASTENING MEANS FOR A ROTATIONAL FASTENER AND METHOD

George A. Tinnerman, 3600 Stewart Ave., Lakewood, Ohio

Continuation of Ser. No. 6,153, Jan. 27, 1970, abandoned, which is a division of Ser. No. 640,213, March 22, 1967, Pat. No. 3,491,646. This application Sept. 24, 1971, Ser. No. 183,662

Int. Cl. B21d *53/20, 53/24*

U.S. Cl. 10—86 F **5 Claims**



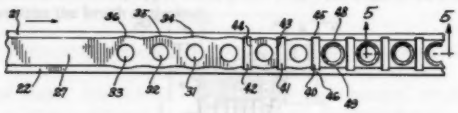
The rotational fastener such as a nut element has an aperture with helical ribs on the circumferential walls spaced by breaks in the periphery of the aperture. These helical ribs commence at the breaks near one surface of the element and extend axially and circumferentially, the ribs increasing in radial height with increasing distance from the one surface. The ends of the ribs serve as teeth for engagement with a shank and cut grooves in the shank.

3,775,791

METHOD OF MAKING PIERCE NUTS IN STRIP FORM

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Division of Ser. No. 21,777, March 23, 1970, Pat. No. 3,704,507. This application Apr. 13, 1972, Ser. No. 243,890
Int. Cl. B21d *53/20, 53/24*
U.S. Cl. 10—86 CL 7 Claims



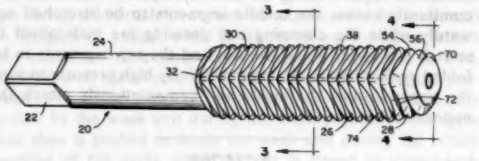
A strip containing a series of flanged pierce nuts connected by flexible and severable sections for use in automatically applying flanged pierce nuts to a panel. The method of forming the strip is also disclosed and comprises providing a blank strip formed with opposed laterally extending flanges, perforating the strip between the flanges, and then slotting the strip between adjacent perforations to form the nut body, after which the sides of the strips are straightened, the holes are threaded and the strip coiled into predetermined lengths. Further, there is disclosed the method of applying pierce nuts from such strip to a panel.

3,775,792

THREAD FORMING TAP

Donald L. Leonard, Lyndonville, Vt., assignor to Vermont American Corporation, Louisville, Ky.

Filed Mar. 1, 1972, Ser. No. 230,844
Int. Cl. B23g *7/02*
U.S. Cl. 10—152 T 23 Claims



A tap having a threaded body of polygonal cross-sectional shape in which the thread comprises arcuate portions with V-crests separated by intervening chordal portions having truncated crests, the initial thread turns on the entrant end of the tap having a continuous sharp V-shaped crest.

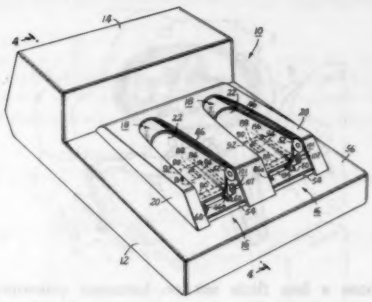
3,775,793

SHOE COVERING APPARATUS

Roger M. Casavant; Wesley S. Larson, both of Enfield, Conn., and Richard L. Panicci, Westfield, Mass., assignors to Allen S. Chen, Belleville, Mich.

Continuation of Ser. No. 84,327, Oct. 27, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,623
Int. Cl. A43d
U.S. Cl. 12—1 R 19 Claims

Apparatus for covering shoes on the feet of a wearer with a protective sanitary shoe wrapper formed of heat-shrinkable material is disclosed, wherein individual shoe wrappers are positioned at a heat-shrink station in an open configuration to receive and enclose a shoe on the foot of a wearer; after the insertion of the shoe, heat is applied to the wrapper to heat-shrink it and conform it to the shoe.

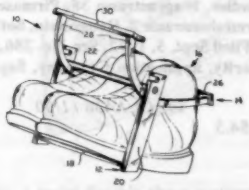


3,775,794

SKI BOOT HOLDER

Jere D. Fisher, 462 N. Holly St., Elizabethtown, Pa.

Filed Jan. 31, 1973, Ser. No. 328,241
Int. Cl. A43d *5/00*
U.S. Cl. 12—1 R 8 Claims



A pair of hollow frames for supporting ski or other kinds of boots. The first frame is fitted over the toe end of the ski boots and a wall of a second frame extending through the first frame is moved behind the boots. Both frames extend around the boots. The free end of the second frame forms a handle for carrying the boots.

3,775,795

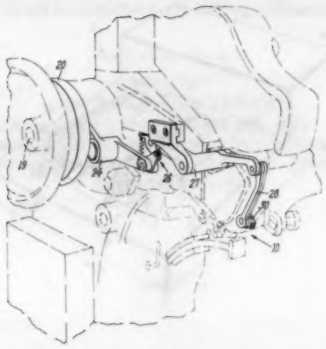
SHOE INSEAMING MACHINE WITH UPPER PRE-TENSIONING MEANS

Richard A. Collins, Beverly, and John F. Martin, South Essex, both of Mass., assignors to USM Corporation, Boston, Mass.

Filed Oct. 5, 1972, Ser. No. 295,246
Int. Cl. A43d *43/00*; D05b *15/02*
U.S. Cl. 12—13.2 5 Claims

A shoe inseaming machine for attaching an upper to an insole along an upstanding rib near the periphery of the insole, while both the upper and insole are positioned on a last, is provided with improved means for progressively pretensioning the upper on the last. The upper pre-tensioning means are lasting instrumentalities which comprise a lasting spur for engaging the upper and a lasting block for driving the upper cooperative to draw a marginal portion of the upper in a

direction having vector components both normal and parallel to an insole-supporting surface of the last. Drawing the margin



of the upper initially tensions the upper on the last. Preferably, means for resiliently driving the spur and block are provided.

3,775,796

MACHINE FOR PRE-SHAPING SHOE PARTS

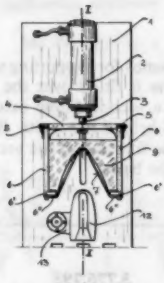
Herbert Schindler, Wagenstrasse 38, Pirmasens, and Gerhard Winter, Pirminiusstrasse 2, Hauenstein, both of Germany

Filed Sept. 5, 1972, Ser. No. 286,585

Claims priority, application Germany, Sept. 8, 1971, P 21 44 904.7

Int. Cl. A43d *11/00*

U.S. Cl. 12—54.3 **15 Claims**



Two electrically non-conductive bands are movably mounted on a machine for pre-shaping shoe parts. Electrically conductive layers are provided between the two bands — the bands and the layers both being flexible. A source of high frequency electrical energy is connected to the conductive layers and to a conductive portion of a rigid form in the shape of a heel last member. A gripping jaw arrangement is provided which stretches the upper leather of the shoe over the heel last member — a thermoplastic heel stiffening or counter being heated by a high frequency heating when the upper leather has been stretched over the heel last member and the two bands are moved into the region of the heel last member.

3,775,797

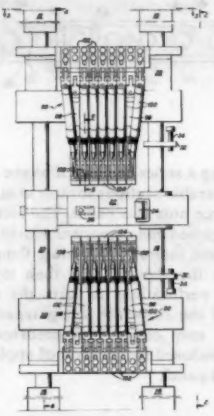
METHOD AND MACHINE FOR LASTING

Jacob S. Kamborian, deceased, late of Newton, Mass.; by Lisbeth N. Godley, Washington, D.C.; by Michael M. Becka, Watertown, Mass.; by Jacob S. Kamborian, Jr., Lincoln, Mass. (executors), and Costa Couris, East Walpole, Mass., assignors to Jacob S. executor of Kamborian Kamborian, Jr., Lincoln, Mass.

Filed Feb. 18, 1972, Ser. No. 227,376

Int. Cl. A43d *21/12*

U.S. Cl. 12—145 **58 Claims**



A lasting machine for stretching the sides of an upper about a last and wiping the margin of the upper against an insole located on the bottom of the last. The stretching and wiping is performed by a plurality of lasting straps. Mechanism is provided that causes bottom segments of the lasting straps to clamp the top line of the upper against the last, then causes middle segments of the lasting straps to press the portion of the upper between the top line and the insole against the last with a pressure that commences proximate to the top line and works its way toward the insole, then causes top segments of the lasting straps to be folded inwardly under relatively low pressure part way towards the insole to act as a back-up while cement is applied along the insole periphery, and then concomitantly causes the middle segments to be stretched upwardly while the clamping and pressing are maintained to stretch the upper about the last and the top segments to be folded against the insole under relatively high pressure to wipe the upper against the insole and cementatiously attach the upper to the insole.

3,775,798

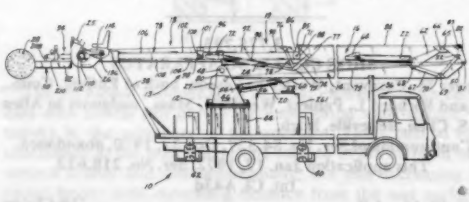
HIGH LEVEL WASHING AND DUSTING APPARATUS FOR AIRCRAFT AND THE LIKE

Walter E. Thornton-Trump, 7410 Old Post Rd., Lincoln, Nebr.

Filed Apr. 13, 1971, Ser. No. 133,534

Int. Cl. B64f *5/00*

U.S. Cl. 15—21 E **18 Claims**



A washing and dusting unit particularly for cleaning the upper surfaces of larger aircraft. A powered brush is con-

nected to the distal end of a powered boom structure which has three elements connected pivotally in seriatim. The first element is adjustably coupled to a support and the elements can be adjusted into a generally inverted-U configuration to bring the brush onto the upper surfaces of the aircraft. The brush is connected to a telescopic member which is in turn connected to an adjustable arm coupled to the boom structure. A seat is provided adjacent the adjustable arm and the orientation of both arm and seat is maintained by a levelling mechanism coupled to the boom structure. The adjustable arm has shoulder, upper arm, elbow and wrist adjustments to position the brush as desired.

3,775,799

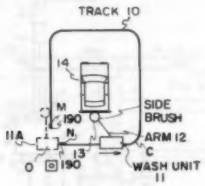
CAR-WASH INSTALLATIONS

Wilburn D. Talbot, 1742 S. 145 East, Orem, and Willis Robert Dunkley, Jr., 2131 Condie Dr., Taylorsville, both of Utah

Filed July 3, 1972, Ser. No. 268,622

Int. Cl. B60s *3/06*

U.S. Cl. 15—21 E **10 Claims**



Improvements in car-wash installations wherein a track comprising contiguous J and L sections form a geometric figure similar to a rectangle having rounded corners, but which is open at one corner and a leg of which extends therebeyond for proper storage of the washing equipment. A wash, rinse-and-wax unit, hereinafter simply referred to as a "wash unit," travels about the track structure and, by its design, accommodates essentially all sizes of automobiles. The revolving side-brush structure associated with the wash unit is dragged or pulled, while in its revolving condition, about the periphery of a small car or compact, and this in both directions of travel relative to the wash and rinse cycle portions. For larger cars the revolving side-brush is alternately pulled by the wash unit during the wash portion of the cycle and then is pushed or leads the wash unit during the return portion of the cycle when the car is rinsed or rinsed-and-waxed. The system is designed such that water is sprayed at all times upon the vehicle, and the top and side-revolving brushes are in continuous motion. The side-brush structure is pivoted about a vertical axis so as to accommodate both lead and lag positions relative to the car-wash function. The track rails and cooperating roller unit guide the wash unit in its path about the vehicle. Numerous advantages are presented in the structure relating to the travel of the wash unit as well as the function and structure of the side-brush or brushes, the rail and travelling roller feature, counter-weighting, and so forth.

3,775,800

ROTARY BRUSH

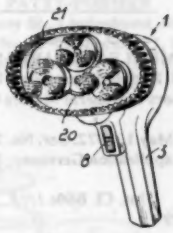
Marco Antonio Veneziani, Via Trezzo d'Adda 3, Milan, Italy

Filed Dec. 20, 1971, Ser. No. 209,770

Int. Cl. A46b *13/02*

U.S. Cl. 15—28 **2 Claims**

Portable electromechanical household tool appliance consisting of a box-like casing made of a number of parts of plastics enclosing an electric motor. A driving shaft of the motor emerges from the box-like casing. A plurality of working tools or cleaning members can be removably secured to the device, the cleaning members including a first interchangeable cleaning member provided with brush means



and removably mounted on the shaft and a second interchangeable cleaning member provided with a peripheral row of bristles and removably mounted on the casing of the device.

3,775,801

DISPENSER FOR A MOIST FLEXIBLE SHEET MATERIAL

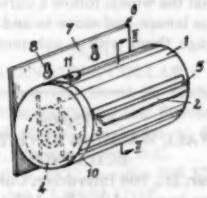
Kurt Walker, Marienstrasse 1, Stuttgart, Germany

Filed Sept. 10, 1970, Ser. No. 71,178

Claims priority, application Germany, Sept. 11, 1969, P 19 46 018.2

Int. Cl. A47k *10/36*

U.S. Cl. 15—104.93 **2 Claims**



A dispenser for a moist flexible sheet material for medical and similar purposes comprising a normally closed container into which the material is either inserted in a moist condition, preferably in the form of a roll, or into which a treating liquid is poured so as to moisten the sheet material while bring unwound from a dry roll when it is withdrawn through a narrow slot in the container wall and a sheet of the desired length is then torn or cut off by a cutting edge or a cutting blade.

3,775,802

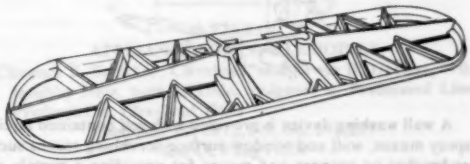
MOP FRAME

Willard F. Grassman, Dayton, and Malcolm Erich, Xenia, both of Ohio, assignors to Silco, Inc., Cincinnati, Ohio

Filed July 27, 1972, Ser. No. 275,783

Int. Cl. A47l *13/24*

U.S. Cl. 15—147 A **10 Claims**



Molded mop frame having a generally oval or rectangular outline including parallel front and back edges joined by end

members. Transverse brace members near the center of the frame receive a steel bar for attachment to a handle. Longitudinal brace members extend from the transverse braces to the end members, with additional bracing provided between the longitudinal brace members and the front and back edges.

3,775,803

HEADLAMP CLEANER ARRANGEMENTS

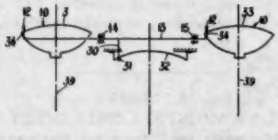
Karl Brumm, and Rudolf Lamprecht, both of Russelsheim, Germany, assignors to General Motors Corporation, Detroit, Mich.

Filed May 1, 1972, Ser. No. 249,231

Claims priority, application Germany, May 3, 1971, P 21 21 531.6

Int. Cl. B60s 1/18

U.S. Cl. 15—250.29 **7 Claims**



A motor vehicle headlamp cleaner arrangement for cleaning the curved surface of headlamp lenses has wipers carried on a reciprocable rod journalled in fixed bearings. Guide means associated with the rod co-act with the wipers to effect rotation of the rod to move the wipers towards and away from the lenses so that the wipers follow a curved path similar to the curvature of the lenses, and move to and fro over the lens surfaces and engage them with a substantially constant wiper pressure.

3,775,804

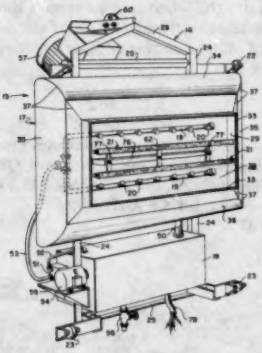
WINDOW WALL WASHING DEVICE FOR HIGH-RISE BUILDINGS

Ralph H. Hoener, Jr., 704 Interdrive, University City, Mo.

Continuation-in-part of Ser. No. 130,616, April 2, 1971, abandoned. This application Feb. 28, 1972, Ser. No. 229,846

Int. Cl. A47l 5/38

U.S. Cl. 15—302 **36 Claims**



A wall washing device is provided with self contained liquid spray means, wall and window surface scrubbing means such as brushes or sponges and means for providing a curtain of high velocity, in-rushing air around a wall washing sight. This air serves to dry the freshly laundered wall and window surfaces and also to confine the washing liquids and retard their egress from the wall washing sight. The high velocity, in-rushing air curtain is delivered through a perimeter aperture which is spaced-apart from the window/wall surfaces, in accordance with a first embodiment; and is provided by forceably drawing atmospheric air inwardly at the perimeter of the wall washing sight in accordance with a second embodiment. The device is adapted to ascend and descend between a pair of vertical mullions of the building. The device is further adapted to provide its wall and window washing function during either the ascending or descending runs or both. The device moreover is intended for remotely controlled operation.

3,775,805

CLEARING SOLID MATERIAL FROM ELONGATE TUBES AND PASSAGES

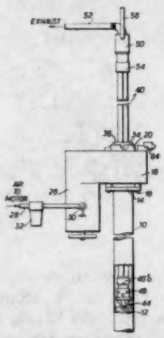
David Thomas Somerled Mitchell, Norwich, and Henry Roy Francis Melsom, Gorlestone, both of England, assignors to Hunting Oilfield Services Limited

Filed July 23, 1971, Ser. No. 165,520

Claims priority, application Great Britain, Mar. 12, 1971, 6,715/71

Int. Cl. A47l 5/38

U.S. Cl. 15—304 **11 Claims**



Method and apparatus for clearing solid material from elongate hollow structures, e.g. solidified catalyst filled tubes of a reformer, comprises inserting into the hollow structure a drill bit connected to a drive motor by a hollow drill stem, operating the motor to rotate the bit and break up the material and simultaneously withdrawing broken up material by the application of sub-atmospheric pressure to the interior of the drill stem which is in communication with the interior of the hollow structure via apertures in the drill bit body.

3,775,806

REMOVING AND COLLECTING DUST FROM TRAVELING MATERIAL

Goran Olbrant, Farsta; Bengt Citron, Vendelso; Sven-Olof Rosby, and Krister Sandblad, both of Vaxjo, all of Sweden, assignors to Aktiebolaget Svenska Flaktfabriken, Stockholm, Sweden

Continuation-in-part of Ser. No. 11,755, Feb. 16, 1970, abandoned. This application Nov. 16, 1971, Ser. No. 199,112

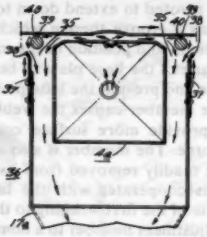
Claims priority, application Sweden, Feb. 14, 1969, 2043/69

Int. Cl. A47l 5/14, 5/38, 9/10

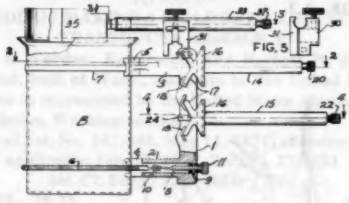
U.S. Cl. 15—306 A **5 Claims**

Apparatus for removing and collecting dust from a travelling sheet or web of material including a blow box having means for impinging jets of clean air against the sheet in directions both in the direction of travel of the sheet and opposite thereto. A suction box cooperates with the blow box to form suction gaps withdrawing the air after its engagement with the material to thereby remove the dust from the material. The suction in the suction box is sufficient to withdraw additional air from the surrounding atmosphere through the spaces which exist between the material and the suction box,

and means is provided to remove the dust from the air withdrawn by the suction box. An alternate embodiment provides guide elements in the suction gaps which support the material at these points through a film of air.

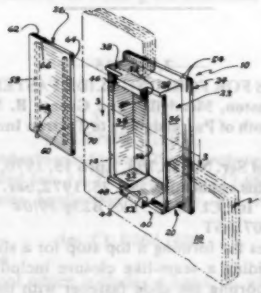


3,775,807
LABORATORY SUPPORT CLAMP STRUCTURE
Roger William McBrien, 211 Hi Point Pl., East Alton, Ill.
Filed July 13, 1971, Ser. No. 162,160
Int. Cl. B65d *23/10*
U.S. Cl. 16—114 R **2 Claims**



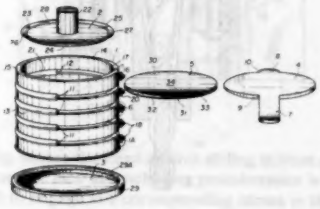
Clamp structure for stably holding one or more laboratory utensils, such as a beaker, test tube, heating pan or other articles, in the hand or on a bench standard. The structure comprises a rigid handle mounting member and associated readily adjustable clamps and handle extensions for ready application to and removal from each other or various other articles to be supported. Preferably the structure includes a utensil support extending from the handle mounting member, and readily operable means for adjusting the support on the handle.

3,775,808
DOOR PULL
Carl H. Little, Jamestown, N.Y., assignor to Weber-Knapp Company, Jamestown, N.Y.
Filed Oct. 13, 1971, Ser. No. 188,917
Int. Cl. A47b *95/02*
U.S. Cl. 16—124 **12 Claims**



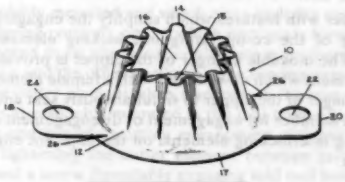
A pull for a sliding door is mounted within a door mounting opening and includes a pull piece retained within the opening by a resiliently deformable back piece; the back piece accommodating for varying door thicknesses.

3,775,809
PATTY-FORMER
Paul Roedel, 39 Muncey St., Lindenhurst, N.Y.
Division of Ser. No. 790,538, Jan. 13, 1969, Pat. No. 3,594,854. This application July 26, 1971, Ser. No. 166,228
Int. Cl. A22c *7/00*
U.S. Cl. 17—32 **5 Claims**



A patty former comprising a tublar body member adapted to have ground meat packed therein, the tubular body member including a wall having a plurality of parallel slots extending about a portion of the circumference thereof, a divider plate adapted to be selectively inserted through the slots in the wall of the tubular body member to divide the meat into patties, a separating member adapted to be releasably secured to the divider plate so that upon removal of the divider plate the separating member is released and maintains the patties in a separated state.

3,775,810
EXPANDABLE COLLAR
Jay G. Smith, Jr., Lewisville; David H. Michal; Thomas E. Cartee, both of Winston-Salem, and Burton J. Rothrock, Winston-Salem, all of N.C., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed July 3, 1972, Ser. No. 268,323
Int. Cl. B65d *77/10*
U.S. Cl. 24—30.5 S **5 Claims**

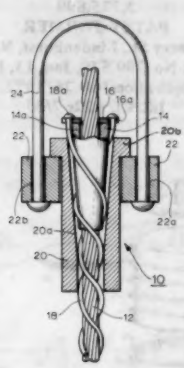


A securing collar for use in securing the four corners of a "sheet" of tobacco to produce a bundle comprising an annular frustro-conical shaped body with corrugated walls which surrounds the four corners of the "sheet" and a severing tab to permit easy removal of the collar.

3,775,811
APPLIANCE FOR LINEAR BODIES
Clarence E. Smrekar, Cleveland, and Erwin H. Goetter, Willoughby Hills, both of Ohio, assignors to Preformed Line Products Co., Cleveland, Ohio
Filed July 26, 1972, Ser. No. 275,227
Int. Cl. F16g *1/04*
U.S. Cl. 24—122.6 **12 Claims**

The disclosed termination appliance for a load bearing cable or the like comprises a frusto-conical member having a central bore for passing the cable and a peripheral flange at its

enlarged end. Helical rods captivated by the flange extend along the beyond the conical member for gripping the cable. The described subassembly is disposed in a housing having a



central passage of a contour complementary to that of the frusto-conical member for receiving said member with the helical elements wedged between the member and the internal housing walls. Other features are disclosed.

3,775,812

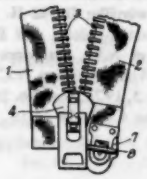
ZIPPER

William M. Carver, Jr., Lombard, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Jan. 3, 1972, Ser. No. 214,834

Int. Cl. A44b *19/38*

U.S. Cl. 24—205.11 R **2 Claims**



A zipper with features which simplify the engaging and disengaging of the co-operating interlocking elements of the zipper. The movable stringer of the zipper is provided with a male element which co-operates with a female element on the fixed stringer of the zipper to simultaneously seat and lock the movable member for engagement or disengagement of the co-operating interlocking elements on the adjacent edges of the stringers.

3,775,813

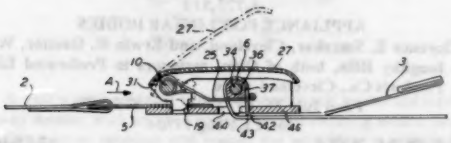
SAFETY BUCKLE

Nori Higuchi, 147-25 38th Ave., Flushing, N.Y.

Filed Dec. 17, 1971, Ser. No. 209,288

Int. Cl. A44b *11/06*

U.S. Cl. 24—230 A **7 Claims**



A buckle for safety belts including latch means for releasably connecting the buckle to a first webbing, adjustment means for adjustably securing the buckle to a second webbing, and spring means which cooperate with both the latch and adjustment means. The adjustment means includes a member which is pivoted to extend down to the base plate of the buckle and has a groove therein which meshes with the base plate. The length and position of the member directs the load along the plane of the base plate to better distribute the load on the buckle and prevent the base plate fron deforming. The groove in the member causes the webbing to travel in a greater path to provide more surface contact, and thus a greater holding force. The member is also split longitudinally so that it may be readily removed from its supporting shaft. The spring means cooperates with the latch to releasably secure an end plate of the first webbing to the buckle and also acts to bias the adjustment member to a home position; a position where the webbing can be readily adjusted with respect to the buckle.

3,775,814

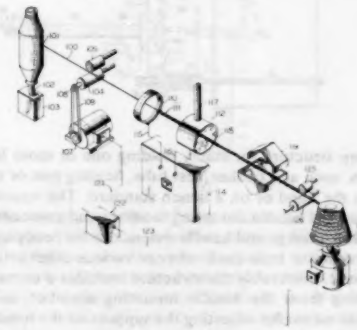
ELECTROSTATIC YARN BULKING APPARATUS

Mayer Mayer, Jr., New Orleans, and Albert Baril, Jr., Metairie, both of La., assignors to The United States of America as represented by the United States Department of Agriculture, Washington, D.C.

Division of Ser. No. 129,735, March 31, 1971, Pat. No. 3,707,024. This application Sept. 29, 1972, Ser. No. 293,730

Int. Cl. D02g *1/00*; D02j *1/20*; D06m *13/00*

U.S. Cl. 28—1.2 **3 Claims**



Chemical and physical methods and apparatuses have been employed to impart permanently bulked configuration to cellulosic and certain non-cellulosic yarns. This has been accomplished by passing the yarn through an electrostatic field either before or after impregnating the yarn with certain chemical crosslinking formulations.

3,775,815

APPARATUS FOR FORMING SLIDE FASTENER STOPS

James R. Johnston, Meadville, and George B. Moertel, Conneautville, both of Pa., assignors to Textron Inc., Providence, R.I.

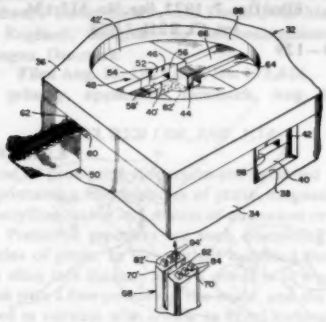
Division of Ser. No. 28,793, April 15, 1970, Pat. No. 3,686,719. This application Jan. 25, 1972, Ser. No. 220,589

Int. Cl. B29d *5/00*; B23p *19/04*

U.S. Cl. 29—207.5 ST **8 Claims**

An apparatus for forming a top stop for a slide fastener of the type providing a seam-like closure including a forming block for supporting the slide fastener with its edges folded and the undersides of the folded edges exposed, stock guides supplying fusible material to recesses on either side of the

forming block, a forming anvil for shearing the fusible material and defining cavities with the recesses for the fusible material and a member for fusing the material to the undersides of the folded edges to form two separate stop members for the top stop.



3,775,816

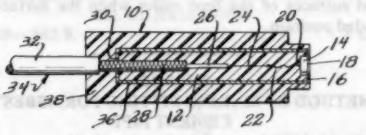
METHOD OF MAKING A MOLDED PIEZOELECTRIC TRANSDUCER ASSEMBLY

Norman R. Gordon, Kennewick, and Herbert N. Pedersen, Richland, both of Wash., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Division of Ser. No. 142,145, May 11, 1971, abandoned. This application July 27, 1972, Ser. No. 275,581

Int. Cl. B01j *17/00*; H04r *17/00*

U.S. Cl. 29—25.35 **4 Claims**



A piezoelectric transducer assembly consisting of a molded inner body securing a piezoelectric crystal, one electrical conductor and the electrical connection therebetween. The surface of the body is plated with a conductive film to provide an electrical connection between the exposed face of the crystal and a second electrical conductor. A molded housing is disposed about the inner body to protect the conductive surface and provide the final configuration for the assembly. Also disclosed is a method for making the described transducer assembly.

3,775,817

TURNING TOOL

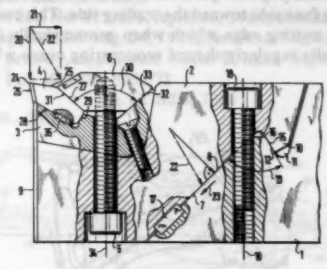
Karl Hertel, Oedenberger Strasse 29, Nuernberg, Germany

Filed Jan. 11, 1972, Ser. No. 217,002

Claims priority, application Germany, Jan. 19, 1971, P 21 02 237.7

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **18 Claims**



A turning tool which includes a head, to which a cutting edge may be attached, and a mounting for the head such that the principal contact face between the head and the mounting slopes downwardly and towards the forward end of the tool to provide a pressure bearing surface for the pressure transmitted to the head from the cutting edge during operation. In order to help secure the head against sliding motion along this principal contact face an anchoring protuberance is provided on the head to engage in a corresponding recess in the mounting.

3,775,818

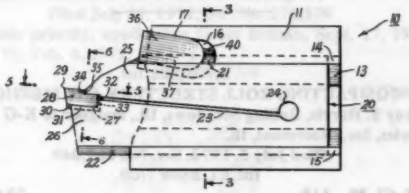
TOOL HOLDER WITH CUTTER CLAMPING MEANS

Frank Sirola, 419 Getty Ave., Clifton, N.J.

Filed Sept. 14, 1972, Ser. No. 289,004

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **3 Claims**



The invention embodies a tool holder in which a spring plate is slidably mounted and which plate includes oppositely disposed spring portions, one of which portions is formed with a seat adapted to receive a cutter element in projecting relation thereon and the other portion having bearing engagement against the cutter element when disposed on the seat. A slide member is also slidably mounted in the tool holder for movement into and out of camming engagement with said spring plate for tightening the cutter element between said spring portions and a screw threadably engaging said tool holder and said slide member is provided for manually turning thereof in opposite directions for moving said slide member into and out of said camming engagement.

3,775,819

ROTATING CUTTING TOOL

Thomas A. Ribich, Cleveland, Ohio, assignor to The Weldon Tool Company, Cleveland, Ohio

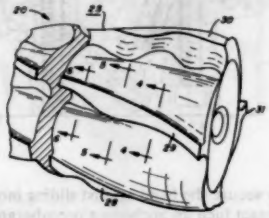
Continuation of Ser. No. 174,058, Aug. 23, 1971, abandoned, which is a continuation-in-part of Ser. No. 31,594, April 24, 1970, abandoned, which is a continuation-in-part of Ser. No. 822,971, May 8, 1969, abandoned. This application Dec. 14, 1972, Ser. No. 315,021

Int. Cl. B26d *1/12*

U.S. Cl. 29—103 A **31 Claims**

A rotatable milling cutter having a plurality of helically extending teeth each of which has a cutting face side and a trailing side interconnected by a relieved surface which extends at

an acute angle to a tangent line which extends through a cutting edge defined by the intersection of the cutting face side and the relieved surface. Wall means are provided on the cutting face side of the teeth which define a plurality of generally axially spaced pockets or indentations recessed from the cutting face side toward the trailing side. This construction presents a cutting edge which when geometrically developed is a generally regularly shaped reoccurring curve which has a



large pitch with respect to amplitude and this cutting edge is the edge which is presented to the work which the cutter operates upon. The construction of the present invention also includes the provision of flattening the high point or high area of a portion of the above referred to reoccuring curve and the flattened portion is designed to be generally parallel to the axis of the tool. The present construction also improves the strength characteristics of the teeth at their extreme end faces.

3,775,820

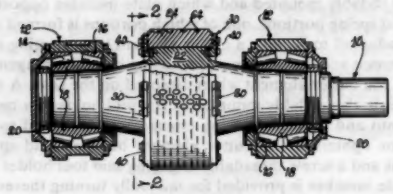
COMPACTING ROLL STRUCTURE AND METHOD

Leroy S. Harris, Rolling Meadows, Ill., assignor to K-G Industries, Inc., Rosemont, Ill.

Filed July 5, 1972, Ser. No. 269,049

Int. Cl. B60b *7/00*

U.S. Cl. 29—118 **23 Claims**



A material compacting apparatus and method wherein a roll tire is located on a supporting shaft section. The roll tire is preferably heated to a temperature in excess of the shaft temperature whereby the tire can be more readily located in position relative to the shaft section. A key structure is employed for securing the tire against movement relative to the shaft section. The key structure comprises a base which is attached to the shaft section and an extension adapted to be received within a recess defined in a side edge of the roll tire. A retaining plate serves to adjustably hold wedges which are adapted to be inserted between the sidewall of a key extension and an inner wall of a recess. A plurality of key structures are preferably employed and the retaining plate serves to secure the assembly of keys and wedges after the wedges are tightly fit relative to the key extension.

3,775,821

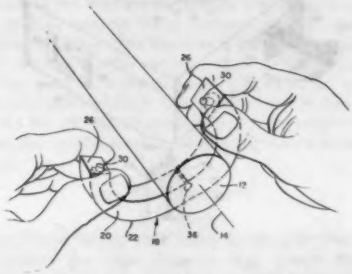
ELASTOMERIC FEED ROLLER

Richard C. Somerville, Dover, Mass., assignor to Globe Rubber Works, Inc., N. Quincy, Mass.

Filed Dec. 7, 1972, Ser. No. 313,136

Int. Cl. B21b *31/08*

U.S. Cl. 29—129 **14 Claims**



An elastomeric replacement feed roller adapted to be secured about a driven roller, which feed roller comprises: a cylindrical doughnut-type feed roller composed of a solid flexible elastomeric material, the inner diameter of the feed roller the approximate diameter of the driven roller about which the feed roller is to be secured, the roller characterized by a single opening extending from the outer to the inner surface of the feed roller to expose a first and second face surface, the surfaces adapted to be secured together, the feed roller composed of a material of sufficient flexibility to permit the feed roller to be opened to a distended position without permanent distortion and placed about the driven roller, the outer surface of the feed roller of sufficient coefficient of friction to move a material placed in contact therewith in operation; means to secure the first and second face surfaces in close sealing engagement and the feed roller about the driven roller; and means to relieve stress in the area opposite the first and second surfaces of the feed roller when the surfaces are in distended position.

3,775,822

METHOD OF MAKING FITTING FOR ASBESTOS CEMENT PIPE

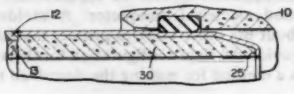
Jay S. Forni, 1101 Leema Dr., Danville, Calif.

Division of Ser. No. 52,470, July 6, 1970, Pat. No. 3,738,689.

This application Mar. 6, 1972, Ser. No. 232,071

Int. Cl. B21d *53/06*

U.S. Cl. 29—157 **2 Claims**



Fittings for asbestos cement pipe are made utilizing cement-lined iron pipe sections, by welding to each end of each section a generally cylindrical sleeve of sheet metal having a portion of the same diameter as the iron pipe succeeded by a spin-formed section of smaller diameter meeting the other one at a step-gasket shoulder, the spin-forming providing increased tensile strength to hold the portion in round, this portion being succeeded by a spin-formed tapered terminal portion ending in a radial lip. After the sleeves are welded to the iron pipe section, they are interiorly lined with cement, using the lips to help hold the cement in place at each end. Then a coupler of asbestos cement having a pair of interior annular grooves, each with a gasket, is placed over the sleeve, and one of the gaskets is abutted against the shoulder.

3,775,823

DISPERSION-STRENGTHENED ZIRCONIUM PRODUCTS

Eivind Adolph; Niels Hansen; Jens Christian Balling Jensen; John Kjoller, all of Roskilde, Denmark; Paul Donald Parsons; Edward David Hindle, and David John Marsh, all of Lancs, England, assignors to Atomenergikommissionen, Copenhagen, Denmark

Filed Aug. 18, 1971, Ser. No. 172,616

Claims priority, application Denmark, Aug. 21, 1970, 4318/70

Int. Cl. B22f *1/00, 3/00, 3/14*

U.S. Cl. 29—182.5 18 Claims

A method of producing dispersion-strengthened zirconium products containing fine particles of yttria, magnesia, cerium oxide or beryllium oxide in a matrix of zirconium or a zirconium alloy. Preferred products are such containing dispersed fine particles of yttria. In the method hydrided zirconium or zirconium alloy in a manner known per se is in a pulverulent state mixed with a fine powder of the oxide, and the mixture is then heated in vacuum with a view to expel hydrogen. Simultaneously or subsequently, the mixture is — in a compressed condition — sintered. This heating operation for expelling hydrogen and sintering the mixture is carried out at a temperature below 800°C, and preferably below 750°C. Prefered dispersion-strengthened zirconium products are characterized by having the metal oxide particles, of an average size not substantially e ceeding 0,5μ and preferably between 0,01 and 0,5μ, dispersed in the said matrix having an average particle size not exceeding 5μ and preferably between 1 and 3μ.

3,775,824

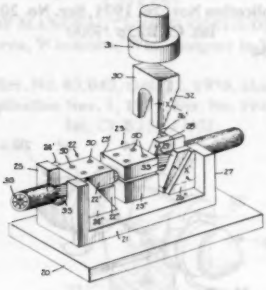
APPARATUS FOR RESTORING THE INITIAL WORK-HARDENED CONDITION IN A CONDUCTOR PORTION ANNEALED BY WELDING

Agostino Oriani, Sesto San Giovanni, Italy, assignor to Industrie Pirelli S.p.A., Milan, Italy

Division of Ser. No. 82,437, Oct. 20, 1970, Pat. No. 3,707,865. This application June 23, 1972, Ser. No. 265,573

Int. Cl. H01r *43/04*

U.S. Cl. 29—203 R 6 Claims



Apparatus for restoring the initial work-hardened properties of a portion of two welded-together cable conductors which has been annealed by the welding, the apparatus comprising a pair of vises mounted on a support so as to grip the conductors at opposite sides of the annealed portion, at least one of the vises being displaceable toward the other axially of the conductors to thereby compress and work-harden the annealed portion. The displaceable vise may be moved toward the other vise by a wedge between the displaceable vise and an inclined surface on the support or by threaded pins interconnecting the vises and having adjustable nuts thereon which engage one of the vises.

3,775,825

CLIP APPLICATOR

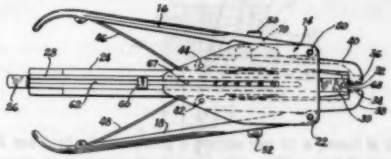
Ernest C. Wood, Los Angeles, and Peter B. Samuels, Encino, both of Calif., assignors to Rene G. Levaux, Beverly Hills, Calif., part interest to each

Division of Ser. No. 817,496, April 18, 1969, abandoned. This application Aug. 24, 1971, Ser. No. 174,501

Claims priority, application Great Britain, Sept. 17, 1971, 43438/71; Feb. 4, 1972, 5352/72

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 D 9 Claims



This application discloses apparatus for applying spaced clips to a filament and severing the filament between the clips so as to provide clips secured on the free ends of the severed filament. The apparatus is disclosed in the context of a method of suturing skin wounds wherein a suture is drawn through an edge of the wound and the clip applicator applies the spaced clips and severs the suture so as to provide one clip holding the suture at the edge of the wound and another clip to the thread so that it may be used to start the next suture.

3,775,826

CLIP APPLICATOR

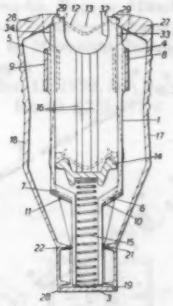
David Arthur Reed, Runcorn, England, assignor to Imperial Chemical Industries Limited, London, England

Filed July 31, 1972, Ser. No. 276,529

Claims priority, application Great Britain, Sept. 17, 1971, 43438/71; Feb. 4, 1972, 5352/72

Int. Cl. B23q *7/10*

U.S. Cl. 29—212 D 9 Claims



A wound clip applicator comprising a magazine for wound clips and forceps jaws, which may be squeezed together to bend a clip into a desired position across a wound and release the clip from the magazine, in which the magazine and forceps jaws are composed of a single piece of plastics material.

3,775,827

CORONA-DISCHARGE ELECTRODE MOUNTING DEVICE

Ivan Keserin, Hochst, Germany, assignor to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Dec. 27, 1971, Ser. No. 212,299

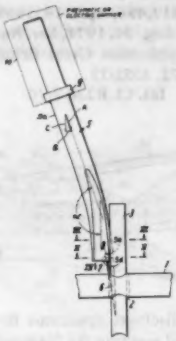
Claims priority, application Germany, Jan. 27, 1971, P 21 03 696.4

Int. Cl. B23p *19/02*

U.S. Cl. 29—275 3 Claims

A tool for securing corona-discharge electrode wires, preferably of a polygonal concave (i.e. clutch) profile,

wherein a wedge is driven into an opening in an electrode-support frame into which the electrode wire is inserted. The tool has a projection received within the concavity of the electrode wire and, in turn, is formed with a groove receiving the head of



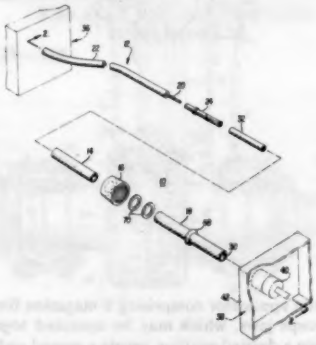
the wedge; the lower end of the tool is bent at an obtuse angle so that the impact portion of the tool is turned away from the electrode or any imaginary extension thereof. A pneumatic or electromotive impactor may be provided at the end of the tool remote from the wedge-engaging end.

3,775,828

APPARATUS AND METHOD FOR FIELD-REPAIRING HIGH-VOLTAGE ELECTRICAL CONNECTOR LEAD ASSEMBLIES

Kenneth Oscar Kopenhaver, Hershey, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 24, 1972, Ser. No. 256,496
Int. Cl. H02q *15/00*; H01r *13/54*
U.S. Cl. 29—401 **8 Claims**



A field-repairing kit for repairing high-voltage electrical connector lead assemblies in the field having a contact pin socket, shrink tubing, a tubular retention cap, and an insulation boot.

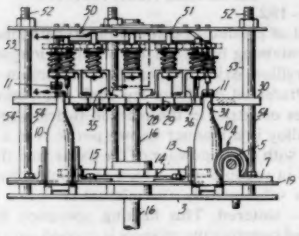
In repairing a defective or damaged lead assembly, the assembly to be replaced is severed from the high-voltage lead, a portion of which is then stripped of its insulation so as to expose its wire conductor. A contact pin socket is then crimped or soldered to the exposed wire conductor, after which the shrink tubing, tubular cap, and insulation boot are slipped over the socket and onto the high-voltage lead in the order recited. A bonding agent may be applied to secure the components in their relative positions, after which the shrink-tubing is shrink-fitted thereover.

3,775,829

METHOD AND APPARATUS FOR REMOVING SCREW CAPS FROM CONTAINERS

Harold B. Rice, Walnut Creek, Calif., assignor to John Burton Machine Corporation, Concord, Calif.

Filed July 31, 1972, Ser. No. 276,451
Int. Cl. B23p *19/00*
U.S. Cl. 29—426 **7 Claims**



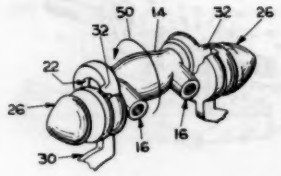
A method and apparatus for removing the screw cap from returnable bottles and like containers prior to refilling the bottles. The twist-off cap on the bottle is impaled by a blade and the blade and bottle are then relatively rotated to remove the cap. In the preferred form of the invention the bottles are moved around an arcuate path of travel and the large diameter body portion of the bottles are pressed against a frictional material to rotate the bottle while the impaling blade is held stationary relative to the bottle. Ejector means is provided for removing the caps from the blades. In another form of the invention, particularly adaptable for use with noncircular bottles, the impaling blades are rotated relative to the bottles.

3,775,830

METHOD OF ASSEMBLYING A DRAWER PULL

Edwin Van Ryn, and Edwin J. Driesenga, both of Holland, Mich., assignors to Keeler Brass Company, Grand Rapids, Mich.

Division of Ser. No. 882,042, Dec. 4, 1969, Pat. No. 3,673,634.
This application Nov. 26, 1971, Ser. No. 202,248
Int. Cl. B23p *19/00*
U.S. Cl. 29—434 **3 Claims**

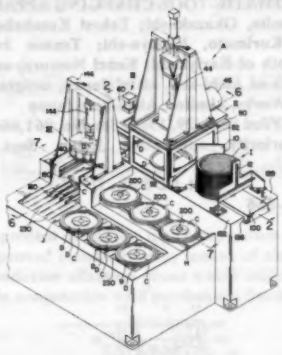


An improved drawer pull and method of assembly, the pull utilizing a support having rearwardly-mounted, axially-extending ears which cam against a cut-away portion of the bail of the pull so as to cause the support to pivot during assembly into coaxial alignment with the bail with the axle of the bail mounted in a bearing slot in the support. The ears and the extremities of the cut-away portion serve to limit the possible rotation of the bail on the support once the support is attached by screws to the drawer. The bail axle and the support bearing slot can be either short so as to require two of each, or the axle and slot can extend across the full length of the support.

3,775,831
METHOD OF PRODUCING A RING GEAR AND FLYWHEEL ASSEMBLY

John F. Cachat, Cleveland, Ohio, assignor to Park Ohio Industries, Inc., Cleveland, Ohio

Filed July 20, 1972, Ser. No. 273,525
Int. Cl. B23p *11/02*
U.S. Cl. 29—447 8 Claims

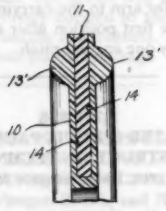


There is provided a method for producing a ring gear and flywheel assembly, which method includes the use of a shuttle arrangement for moving successive ring gears through a high frequency induction heating and quench hardening station, a lower frequency tempering station, and a station wherein the heated ring gear is magnetically held and shifted over the outer periphery of an aligned flywheel preparatory to cooling of the ring gear to shrink fit it upon the flywheel.

3,775,832
METHOD OF MANUFACTURING SHROUDED GASKETS

Bruno H. Werra, Waukesha, Wis., assignor to Ladish Co., Cudahy, Wis.

Division of Ser. No. 83,042, Oct. 22, 1970, abandoned. This application Nov. 1, 1971, Ser. No. 194,250
Int. Cl. B23p *11/02*
U.S. Cl. 29—450 2 Claims

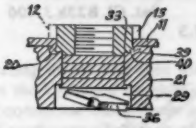


The gasket comprises a sheath of firm, relatively tough and non-stretchable fluoroplastic material having a circular peripheral slot machined into its periphery and having machined externally-projecting ribs, and a flat, ring-shaped elastomeric core which is stretched into position for insertion in said slot of the sheath.

3,775,833
METHOD OF SECURING FASTENERS TO SHEET MATERIAL

William L. Grube, Lake Bluff, Ill., assignor to MacLean-Fogg Lock Nut Co., Mundelein, Ill.

Division of Ser. No. 13,007, Feb. 20, 1970, Pat. No. 3,693,237. This application Apr. 20, 1972, Ser. No. 245,765
Int. Cl. B23k *21/00*
U.S. Cl. 29—470.1 6 Claims

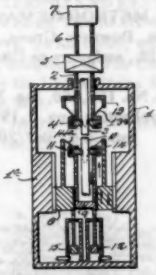


A method of attaching a pierce nut to a panel is disclosed wherein by a single stroke of a ram a threaded fastener, such as a nut, acts as a punch and pierces its own hole in the sheet metal panel to which it is to be fastened. The nut has one or more laterally extending flanges which abut upon one side of the said panel, the corners of the nut being displaced laterally in the die associated with the piercing operation, preferably under the flange, to clinch the material therebetween. The panel is also displaced at the displaced region of the nut and in the same general direction as the displaced region of the nut. The method is not dependent upon any particular thickness, hardness or ductility of the material of the panel, nor does the nut need to have any predetermined hardness. The displaced material of the nut and panel is compressed together to form, in effect, a cold weld, but it is not confined laterally, thereby avoiding binding of the displaced material in the back-up die used to displace the materials.

3,775,834
METHOD OF FRICTION WELDING AND APPARATUS THEREFOR

Yuji Ishikawa, Showa-ku, Nagoya; Mitsuhiro Numata, Kasugai-gun, and Teruki Tomisige, Nakamura-ku, Nagoya, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1970, Ser. No. 98,432
Int. Cl. B23k *27/00*
U.S. Cl. 29—470.3 6 Claims



An improved method of friction welding consisting of friction, correction, and upset steps, is disclosed. Said improvement exists in that during said correction step, as soon as the relative rotational speed between the respective bodies to be welded has been reduced to zero, at least one of said bodies to be welded is quickly rotated about the axis of said rotation by the amount falling within 0° to 360° in one direction to make correction of the relative angular position about said axis of rotation. In the preferred embodiment of the disclosure, the quick correction of relative angular position is achieved by means of a pair of positioning members having complementa-

ry configurations to mesh with each other, one being fixedly secured to one of the bodies to be welded, while the other being secured fixedly in the rotational direction but slidably in the axial direction relative to the other body to be welded.

3,775,835

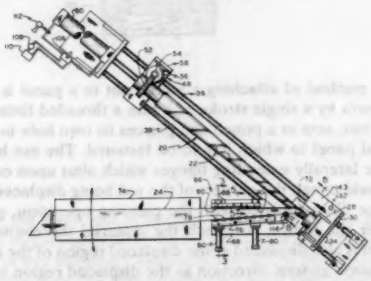
TAPERED POLE CONSTRUCTION AND MANUFACTURE OF SAME

Ford B. Cauffiel, 4940 Homerdale Ave., Toledo, Ohio

Filed Sept. 7, 1971, Ser. No. 177,992

Int. Cl. B23k *31/06*

U.S. Cl. 29—477.3 **2 Claims**



A tapered pole construction and apparatus for making same are provided. The tapered pole is made from a spirally wound strip of tapered configuration and, in a preferred form, the strip has an offset, welded lap seam. The pole also can be made of tapered metal strips, joined end-to-end, of different gauges so that lighter gauge strips are used toward the top of the pole and heavier gauge toward the bottom. The apparatus for making the tapered poles includes a tapered mandrel having a spiral groove therein which receives the flat overlapped, offset welded joint. The mandrel is rotated in one direction as the strip is wound thereon and, when the pole is completed, the mandrel can be rotated in the opposite direction with the pole held stationary so that the pole can be unscrewed from the mandrel for easy removal. The apparatus includes sensing means for sensing one edge of the strip being wound onto the mandrel with the sensing means operating drive means for the mandrel to advance it at a desired rate.

3,775,836

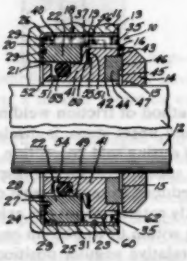
SHAFT SEAL METHOD OF MANUFACTURING

Richard H. Jackson, Downers Grove, and Dale J. Warner, Chicago, both of Ill., assignors to Gits Bros. Mfg. Co., Inc., Chicago, Ill.

Division of Ser. No. 108,850, Jan. 22, 1971, Pat. No. 3,718,336. This application Aug. 7, 1972, Ser. No. 278,599

Int. Cl. B23k *1/20*

U.S. Cl. 29—483 **2 Claims**



A mechanical shaft seal having a primary face seal and a secondary internal seal wherein the seal line of the secondary seal is balanced in axial alignment with the primary face seal. The seal is a take-apart seal having a housing with a brazed-in internal radial step, the housing receiving a stepped adapter having a circumferential groove therein for the secondary seal and an axial end face adapted to hold the primary face seal. The adapter is axially movable in the housing and is urged out of the housing by a spring.

3,775,837

NUMERICALLY CONTROLLED MACHINE TOOL WITH AUTOMATIC TOOL CHANGING APPARATUS

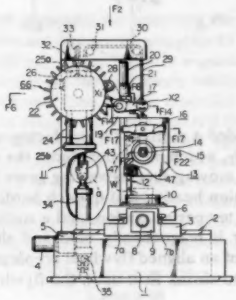
Tamaki Tomita, Okazaki-shi; Takesi Kusakabe, Kariya-shi; Mikishi Kurimoto, Nagoya-shi; Tsuneo Iwami; Keniti Iwami, both of Kariya-shi; Kenzi Nomura, and Yoshikazu Sano, both of Aichi-ken, all of Japan, assignors to Toyoda Machine Works, Limited, Aichi-ken, Japan

Filed Sept. 29, 1969, Ser. No. 861,666

Claims priority, application Japan, Sept. 30, 1968, 43/71024

Int. Cl. B23q *3/157*

U.S. Cl. 29—568 **30 Claims**



Numerically controlled machine tool with automatic tool changing apparatus is capable of carrying diverse tools in an interrelated relationship. The tool changing apparatus comprises a tool magazine and carrying means for both taking a new tool from a predetermined first position of the tool magazine to a predetermined second waiting position thereof after normal turning of the tool magazine by two angular pitch and for carrying a previously used tool positioned at the second waiting position to the first position, and a tool transfer arm for simultaneously removing the previously used tool from the spindle and removing the new tool from the carrying means at the second position and next transferring the new tool to the spindle. The previously used tool is transferred from the tool transfer arm to the carrying means and then to the magazine at the first position after an inverse turning of the tool magazine by one angular pitch.

3,775,838

INTEGRATED CIRCUIT PACKAGE AND CONSTRUCTION TECHNIQUE

Claudio Dalmasso, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S.p.A., Ivrea, Italy

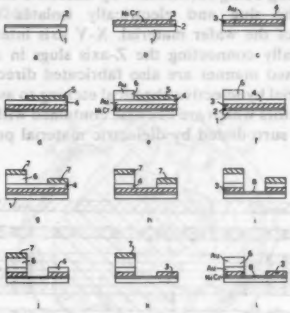
Continuation of Ser. No. 120,185, March 2, 1971, abandoned. This application Apr. 24, 1972, Ser. No. 246,595

Int. Cl. B01j *17/00*

U.S. Cl. 29—577 **4 Claims**

Disclosed is an integrated circuit arrangement and construction technique wherein an improved circuit board, having deposited thereon resistors and conductors, is constructed by means of a combination of evaporation and electrodeposition techniques. A layer of resistive material and a layer of

conductive material are successively deposited by means of evaporation onto a substrate. A third layer of conductive material is then deposited by means of electroplating. The



construction process includes a high temperature stabilization phase, an improved resistor trim by means of electroerosion, and a semiconductor afixation phase which utilizes high temperature gas in conjunction with mechanical friction.

3,775,839

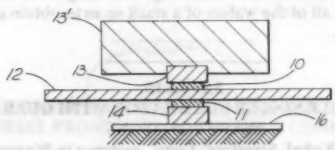
METHOD OF MAKING A TRANSDUCER

Robert Eugene Talmo, Pasadena, and Edward R. Brady, Sierra Madre, both of Calif., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,070

Int. Cl. G01r *3/00*

U.S. Cl. 29—595 **11 Claims**



A method of making a strain gage transducer including the steps of fusing a glass sheet to each side of a metal cantilever beam in an inert gas, lapping the fused sheet, and bonding a silicon strain gage to each sheet by heating and simultaneously applying a positive potential to each gage relative to the potential of each corresponding sheet. Thin sheets may be employed, whereby breakage due to differential thermal expansion may be eliminated. The fusion step also is advantageous because the glass is firmly bonded to the beam. This means that the beam reinforces the fused sheets. They can, therefore, easily be lapped without fear of breakage.

3,775,840

METHOD OF PRODUCING A COMPOSITE CONDUCTOR BAND FOR USE IN MAKING A TUBULAR SUPERCONDUCTOR

Heinrich Diepers, Erlangen-Bruck, and Horst Musebeck, Erlangen, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

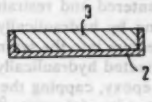
Filed Aug. 10, 1972, Ser. No. 279,387

Claims priority, application Germany, Aug. 19, 1971, P 21 41 621.7

Int. Cl. H01v *11/00*

U.S. Cl. 29—599 **9 Claims**

A method for producing a conductor band which includes a layer of niobium adjacent a layer of an electrically normal conducting metal and respective niobum chords defining the longitudinal edges of the band. The bimetal conductor band is produced by bending a niobium strip to have a U-shaped profile, at least approximately filling the space bounded by the inside surface of the U-shaped niobium strip with an electrically normal conducting metal, and then joining the normal conducting metal to the U-shaped niobium strip to form the band. The bimetal conductor band made in this manner is used in a method of producing a tubular conductor for superconducting cables and the like.



3,775,841

METHOD OF ADJUSTING THE DIMENSIONS OF SINTERED FERROMAGNETIC CORES

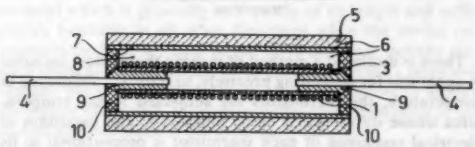
Franciscus Johannes Maria Lathouwers, and Jacob De Groot, both Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sept. 29, 1971, Ser. No. 184,696

Claims priority, application Netherlands, Oct. 9, 1970, 7014813

Int. Cl. H01f *41/02*

U.S. Cl. 29—605 **2 Claims**



A method of adjusting the dimensions of sintered ferromagnetic coil cores by coating the cores in a mold with a layer of coating material consisting of a binder and a ferromagnetic powder.

3,775,842

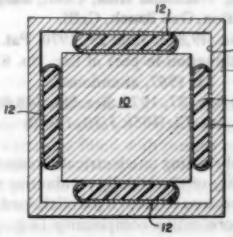
METHOD FOR CENTERING AND RESTRAINING COILS IN AN ELECTROMAGNET

Robert Sheldon, Geneva, Switzerland, and Bruce P. Strauss, Downers Grove, Ill., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 16, 1972, Ser. No. 281,264

Int. Cl. H01f *7/06*

U.S. Cl. 29—606 **9 Claims**



A body is centered within a housing and restrained from moving from such centered position by surrounding the body

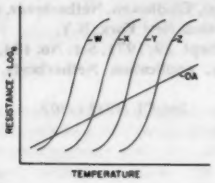
with a plurality of flattened like tubes positioned between the body and the interior walls of the housing and simultaneously expanding the tubes so as to center the body by filling the tubes with a hardenable material under pressure. Upon hardening of the material, the body is restrained from moving from the centered position. The method is applied particularly to the coils of an electromagnet and the beam tube of a particle accelerator so centered and restrained within a tubular electromagnet housing by hydraulically pumping an epoxy resin under a high pressure into the symmetrically spaced like tubes which are connected hydraulically in parallel and, following curing of the epoxy, capping the ends of the tubes to maintain hydraulic integrity of the system.

3,775,843

METHOD OF MAKING TEMPERATURE RESPONSIVE APPARATUS

Richard E. Wendt, Jr., 348 Maple Ave., Edgewood, Pa.

Division of Ser. No. 62,111, Aug. 7, 1970, Pat. No. 3,731,535.
This application Sept. 6, 1972, Ser. No. 286,639
Int. Cl. H01c *7/04*
U.S. Cl. 29—612 **10 Claims**



There is disclosed a method of making thermistors included in apparatus for measuring precisely, to 0.01° C., difference in temperature; the thermistors are subjected to the temperatures whose difference is being measured. The logarithm of electrical resistance of each thermistor is proportional to its temperature and the thermistors are connected in a ratiometric circuit for measuring their relative resistances. Each thermistor is a ceramic of ferroelectric material (for example, barium-strontium titanate) formed by mixing powders of different compositions, each composition having a different ferroelectric resistance anomaly, and then firing and oxidizing bodies pressed from the mixture of powders. The powders are derived by reducing separate slurries, each containing a composition, to powder. The mixture of powders is heterogeneous so that the grains of the ceramic include a plurality of particles of powder which microscopically would manifest distinct ferroelectric resistance anomalies if fired along but the macroscopic response of the ceramic is log-linear over a substantial temperature range.

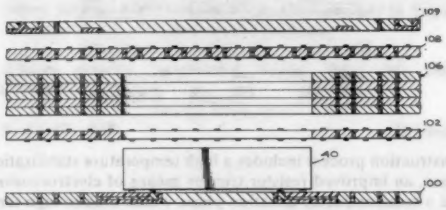
3,775,844

METHOD OF FABRICATING A MULTIWAFER ELECTRICAL CIRCUIT STRUCTURE

Howard L. Parks, Woodland Hills, Calif., assignor to Bunker Ramo Corporation, Oak Brook, Calif.

Division of Ser. No. 49,873, June 25, 1970, Pat. No. 3,705,332, which is a continuation-in-part of Ser. No. 613,652, Feb. 2, 1967, abandoned.
Filed Apr. 27, 1972, Ser. No. 248,003
Int. Cl. H05k *3/30, 13/00*
U.S. Cl. 29—626 **18 Claims**

A method of fabricating an electrical circuit structure comprised of a plurality of electrically conductive wafers stacked together under pressure to form a parallelpiped structure containing one or more active components (e.g., integrated circuit chips) as well as conductor means providing coaxial interconnections in X, Y and Z-axis directions. A stack is normally comprised of conductive wafers of different types including component wafers, interconnection wafers, and connector wafers. Z-axis interconnections, i.e., through-connections in a wafer, are fabricated directly from the wafer material itself by selective chemical etching of the wafer so as to form spaced electrically insulated solid conductive slugs within the wafer profile extending between the top and bottom wafer surfaces, with each slug being surrounded by dielectric material which supports the slug and electrically isolates it from the remainder of the wafer material. X-Y axis interconnections for electrically connecting the Z-axis slugs in a wafer in a predetermined manner are also fabricated directly from the wafer material by selective chemical etching so as to form X-Y axis conductors which are likewise contained within the wafer profile and surrounded by dielectric material providing support and electrical isolation. Highly reliable wafer-to-wafer electrical interconnections are obtained in a stack by providing malleable conductive contacts between opposing contacting Z-axis slugs in adjacent wafers, and pressure stacking the wafers so that these malleable contacts are deformed. Additional malleable contacts which are likewise deformed by the pressure stacking are also advantageously provided between other opposing portions of adjacent wafer surfaces for providing wafer-to-wafer ground interconnections. The advantages of pressure stacking are further increased by providing a uniform pattern for the Z-axis slugs and the ground interconnections on all of the wafers of a stack so as to obtain uniform distribution.

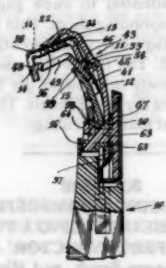


3,775,845

ADJUSTABLE SINGLE EDGE RAZOR WITH GUARD AND WASH POSITIONS

Leopold K. Kuhnl, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Sept. 14, 1972, Ser. No. 289,038
Int. Cl. B26b *21/24, 21/40*
U.S. Cl. 30—41 **8 Claims**



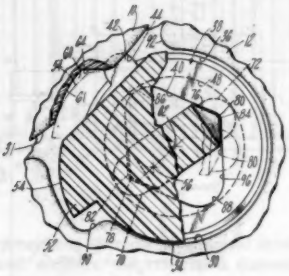
The specific embodiment provides an adjustable single edge razor having a helical cam for moving a guard bar relative to the cutting edge of the blade. The cam has a recess formed therein which permits significant movement of the guard bar away from the cutting edge to provide a blade wash position. The cam also has a position for moving the guard bar in front of the cutting edge to protect the blade when not in use.

3,775,846

PRUNER

Edward J. Johnson, New Britain, Conn., assignor to The Stanley Works, New Britain, Conn.

Filed Jan. 31, 1972, Ser. No. 221,923
Int. Cl. B26b *13/16*
U.S. Cl. 30—262 6 Claims



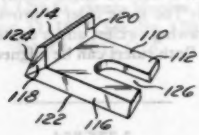
A pruner having a pair of pivoted handles with opposed confronting surfaces. A rotary latch with a latching finger mounted in a transverse opening in one handle engages a recess in the confronting wall of the other. The recess is formed on an arc about axis of latch and the engaging surface of the latch finger is formed on an arc about an axis offset from the latch axis to provide wedging engagement with the recess. Resilient bifurcated legs on the latch pass over center to a latching position and a force urging the handles apart produces a force on a moment arm to two axes to urge the latch through the overcenter position by a snap-action to assume an unlatched position.

3,775,847

CUTTING BLADE FOR REMOVING COVERING MATERIAL FROM AN ELECTRICALLY CONDUCTIVE CABLE

Raymond G. Horrocks, Parkview, Ohio, assignor to The Scott & Fetzer Company, Cleveland, Ohio

Division of Ser. No. 878,022, Jan. 2, 1971, Pat. No. 3,620,104, which is a continuation-in-part of Ser. No. 846,196, July 30, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,845
Int. Cl. H03g *1/12*
U.S. Cl. 30—353 5 Claims



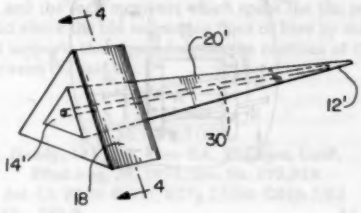
A cutting blade for removing insulation and/or semi-conductive material from an electrically conductive cable. The blade includes a flat, thin body with a plane bottom surface and a thin flange at one end of the body having a plane outer side surface with the blade being beveled to form a long cutting edge on the body and a short cutting edge on the flange, the cutting edges making a wide included angle with one another and having a common end.

3,775,848

PERIODONTAL AND DENTAL CLEANSER AND PERIODONTAL STIMULATOR

Edward M. Barnett, 1 Masters Ct., Potomac, Md.

Continuation-in-part of Ser. No. 130,395, April 1, 1971, abandoned. This application Nov. 3, 1972, Ser. No. 303,342
Int. Cl. A61c *15/00*
U.S. Cl. 132—89 5 Claims



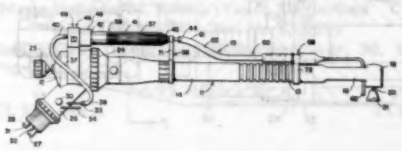
A periodontal and dental cleaning and periodontal stimulating device for both interdental spaces of anterior teeth and interproximal tunnels of posterior teeth comprising an elongated body member having a tapered configuration and fabricated of a material which is partially elastic and is deformable on contacting the hard surfaces of the teeth or firm, healthy gingival tissue, and a core member ensheathed within the body member. The core member is fabricated of a material which is generally stiff axially of its length and sufficiently bendable in all other directions when the device encounters the hard surfaces of the teeth and firm, healthy gingival tissue to enable the device to pass through the spaces and tunnels, but is also sufficiently resistant to bending to enable the device to depress or displace unhealthy, edematous or inflamed gingival tissue in the spaces and tunnels.

3,775,849

DENTAL HANDPIECE ATTACHMENT

John J. Condon, N. 5901 Lidgerwood, Spokane, Wash.

Continuation-in-part of Ser. No. 133,173, April 12, 1971, abandoned. This application Mar. 20, 1972, Ser. No. 236,252
Int. Cl. A61c *13/22*
U.S. Cl. 32—59 3 Claims

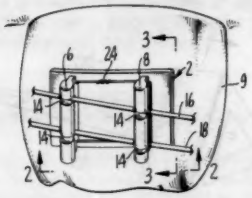


A dental handpiece attachment is described for use on a dental handpiece fitted with a prophy contra-angle. The attachment has a cartridge filled with prophy paste that may be dispensed as desired adjacent the working element of the polishing tool to provide a lapping compound for accomplishing a polishing procedure without the necessity of periodically removing the polishing tool to replenish the lapping compound. The cartridge has a free piston mounted therein that is responsive to the application of air pressure to push the prophy paste. The cartridge is releasably loaded in a spring-biased receiving fixture that is affixed to the handpiece.

3,775,850
ORTHODONTIC APPARATUS

Michael E. Northcutt, 1704 Miramonte Ave., Los Altos Hills, Calif.

Filed Oct. 28, 1971, Ser. No. 193,400
Int. Cl. A61c 7/00
U.S. Cl. 32—14 A 26 Claims

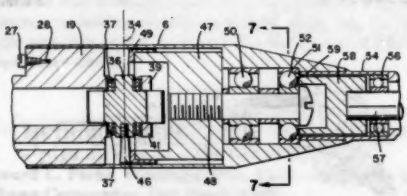


Orthodontic apparatus employing parallel unbent arch wires in cooperation with brackets having predetermined ideal three dimensional positions built into the bracket structure for each tooth. Friction between the bracket and arch wires is minimized by using point contacts. In one embodiment, a plastic bracket may be used having snap-in slots for holding the arch wires. In another embodiment a staple may be inserted in the bracket to hold the arch wires. Both embodiments also permit the use of ligature wires to hold the arches. The unbent light arch wires may be configured in pairs, normally one above the other, or in threes, triangular or in line, to provide greater rigidity. Substantial time saving is achieved through the use of the orthodontic apparatus herein disclosed while at the same time achieving greater success with less skill by the practitioner. The invention overcomes the shortcomings of prior art "edgewise" and "light-wire" orthodontic techniques.

3,775,851
DENTAL HANDPIECE

Lloyd P. Flatland, 15 Quisisana Dr., Kentfield, Calif.

Filed July 14, 1972, Ser. No. 272,075
Int. Cl. A61c 19/02
U.S. Cl. 32—26 11 Claims

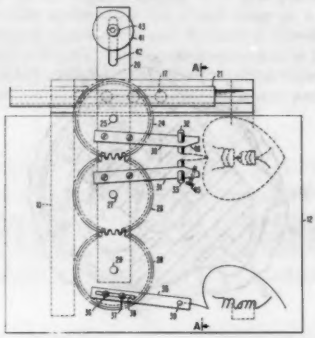


The dental handpiece disclosed herein has a housing extending along a longitudinal axis. An air turbine rotatable about a transverse axis is disposed within the housing and fed with air through a hollow rod in the housing and rotatable about the longitudinal axis so that an inclined nozzle at the rod end can drive the turbine in either direction. The turbine drives a transverse friction shaft engaging a friction disc on a drive shaft journalled in the housing for rotation about the longitudinal axis. Spent air my exhaust directly to atmosphere or through a hand controlled port or through a port throttled according to drive shaft speed. A externally releasable chuck in the housing is driven by the drive shaft.

3,775,852
REVERSE IMAGE PANTOGRAPHIC APPARATUS

Nels T. Sandin, 15 Van Etten Rd., Binghamton, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,507
Int. Cl. B43l 13/10
U.S. Cl. 33—23 E 4 Claims

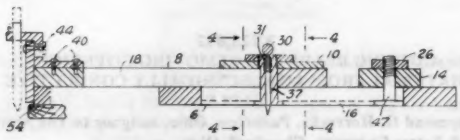


A pantographic apparatus of the type which, by virtue of intermeshing gears bearing styli, simultaneously produces a true and a superposed reverse image of a tracing is described.

3,775,853
PORTABLE DRAFTING INSTRUMENT

Raymond Doret, and Michel Doret, both of 65-84 Booth St., Forest Hills, N.Y.

Filed Feb. 9, 1972, Ser. No. 224,726
Int. Cl. B41l 9/04
U.S. Cl. 33—27 C 3 Claims



A portable drafting instrument for drawing horizontal and vertical lines, specific angles and circles with pencil, ink, chalk on various surfaces, including paper and blackboards. The instrument comprises a pair of slotted rulers and a protractor secured by a thin bolt extending through the slots. One of the rulers is swingable about the bolt and secured to the other by a nut on the bolt at a desired angle relative to the other, for marking an angle. The same ruler is provided wih a marking implement for drawing circles, and a centering pin extending through the bolt. Both rulers can be aligned to form a straight edge.

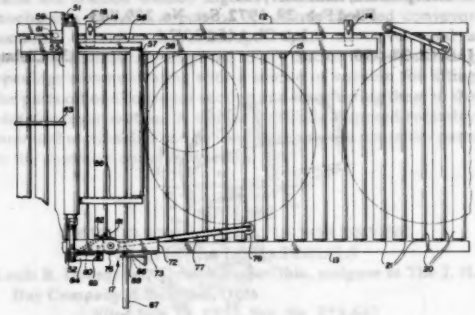
3,775,854
CHECKING STATION FOR TIRES OF DIFFERENT SIZES

Clarence Hofelt, Jr., and Francis C. Rongone, both of Cuyahoga Falls, Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Filed Dec. 30, 1971, Ser. No. 214,091
Int. Cl. G01b 5/10
U.S. Cl. 33—174 R 12 Claims

A method and apparatus for measuring automatically the diameter and axial width of a pneumatic tire while the tire is traveling continuously along a conveyor for example. The

measurments are represented by electrical signals, the respective levels of which may be used as parameters to check the size and load bearing classification of the tire and to program



subsequent processing thereof. Mechanical sensors are used to engage and measure the respective dimensions and to generate the respective signals.

3,775,855

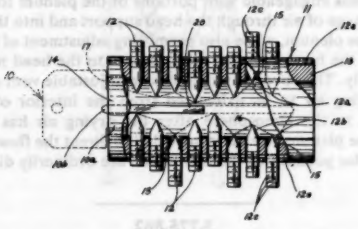
METHOD AND TUMBLER GAGE FOR MEASURING KEY CUTS

Noah S. Marmel, 1889 Alpha Rd., Glendale, Calif.

Filed Jan. 28, 1972, Ser. No. 221,507

Int. Cl. G01b *5/20*

U.S. Cl. 33—174 F **2 Claims**



Key cuts are measured by inserting a key into a holder having tumblers provided with predetermined gage markings, said tumblers being adapted to move a distance corresponding to the depth of the key cut. The tumblers are on both sides of the holders and permit measuring the key cuts on both sides of the key simultaneously.

3,775,856

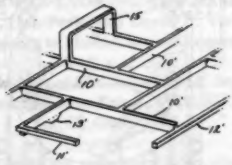
TILE SETTING TEMPLATE

Henry Schmidt, 1111 12th St., Santa Monica, Calif.

Filed Aug. 11, 1971, Ser. No. 170,703

Int. Cl. G01b *5/16*

U.S. Cl. 33—180 R **3 Claims**



A template in the form of a rack, for setting tile expeditiously and with accuracy regardless of pattern complexity while minimizing "straightening up" procedures. This template is a time saving tool when made of moderate size for ease of handling, and multiple units thereof are cooperatively employed as distinguished from large and cumbersome units that are easily damaged with consequently developed imperfections. This template is of characteristic quadrilateral plan configuration having tile receiving pockets sized and shaped according to the tile to be set, and the pockets arranged according to the pattern thereof that is desired. The marginal members of interengaged templates are disposed so as to mate and jointly occupy the joints between the tile which are later grouted; and the rack members which space the tile are held positioned above the tile supporting floor or base by means of localized supports that depend within the confines of the said joints between the said tile.

3,775,857

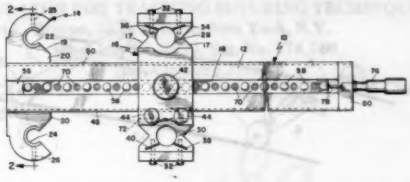
SET-UP TOOL

Harry G. Handy, 1117 Mt. View Rd., El Cajon, Calif.

Filed Aug. 30, 1971, Ser. No. 175,919

Int. Cl. B23b *49/00;* **B27g** *23/00;* **G01b** *5/02*

U.S. Cl. 33—185 R **11 Claims**



A tool for layout and machining operations that incorporates an end plate for locating the tool with respect to a datum point, and beam means for slidably mounting a carriage for movement with respect to the datum point. The carriage is provided with means for fixing the carriage in relationship to a scale bar that contains a plurality of protruding locating balls. The carriage is located with respect to a ball thereby determining the incremental position of the carriage along the beam. Fine adjustment of the carriage position is accomplished by movement of the scale bar within the beam and thereby the movement of the carriage affixed thereto. This movement is measured by a standard micrometer. The carriage contains provision for receiving bushings or other means for locating a point at which machining is required and thereafter receiving a tool bit for accomplishing the machining operations.

3,775,858

GRADED GAUGE

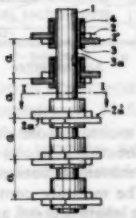
Hans Meyer, Bugnon, 24, Renens (Vaud), Switzerland

Filed Apr. 13, 1971, Ser. No. 133,599

Claims priority, application Switzerland, Apr. 30, 1970, 6577/70

Int. Cl. G01b *3/38*

U.S. Cl. 33—168 R **2 Claims**



A graded gauge comprising a carrier body carrying a plurality of measuring contact blocks, the spacing between which

is accurately defined, each block providing a pair of oppositely facing measuring surfaces formed on cooperating superposed measuring members, the outline of each of which is recessed so as to uncover the measuring surface of the cooperating member. The assembly of the parts is performed by means of terminal plates and spacers, holding said parts in position during their fixing on the carrier body, preferably by means of an epoxy resin, introduced between the blocks and the carrier body.

3,775,859

METHOD AND APPARATUS FOR MEASURING THE INCLINATION OF A RAILWAY TRACK

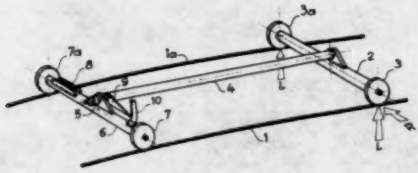
Gerard Sauterel, Pully, Switzerland, assignor to Matisa Material Industrial S.A., Grissier, Switzerland

Continuation of Ser. No. 5,279, Jan. 23, 1970, abandoned. This application June 27, 1972, Ser. No. 266,711

Claims priority, application Switzerland, July 24, 1969, 1040/69

Int. Cl. B61k 9/08

U.S. Cl. 33—338 **4 Claims**



This invention relates to a method of and apparatus for measuring the transverse inclination of a railway track during levelling and aligning of the track by means of an inclination measuring instrument which is sensitive to the accelerations and vibrations which are transferred to the track by the track adjusting tools.

3,775,860

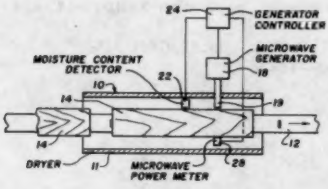
METHOD FOR DRYING MATERIALS WITH MICROWAVE ENERGY

Derek Barnes, and Vishwa N. P. Mathur, both of Vancouver, British Columbia, Canada, assignors to MacMillan Bloedel Limited, Vancouver, British Columbia, Canada

Filed June 3, 1971, Ser. No. 149,449

Int. Cl. F26b 3/34

U.S. Cl. 34—1 **4 Claims**



Method for drying moisture-laden dielectric materials in individual pieces by directing microwave energy against each piece during relative movement between a microwave generator and the piece. The moisture content of the piece is detected throughout the length thereof, and the generator is controlled so as to adjust the microwave energy in accordance with the moisture content of the portion of the piece against which the microwave energy is being directed.

3,775,861

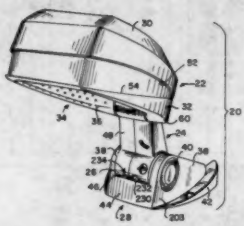
HAIR DRYER

Robert S. Waters, Lancaster; Edward J. Doyle, Hatboro, and Meyric K. Rogers, Lancaster, all of Pa., assignors to Schick Incorporated, Lancaster, Pa.

Filed Feb. 28, 1972, Ser. No. 229,763

Int. Cl. A45d 20/24

U.S. Cl. 34—99 **39 Claims**



A portable hair dryer which includes a base, a head supporting assembly and a dryer head assembly. The dryer head assembly includes a generally annular air distribution plenum therein for receiving drying air and directing it radially inwardly, and a cover which is movably mounted in respect to the annular plenum. The cover may be raised to increase the volume within the head assembly for accomodating the head of the user, and may be lowered to a storage position closely overlying the plenum. A squirrel cage blower is contained in an impeller housing disposed at the bottom of the head supporting assembly, the lower portion of which is mounted for adjustable movement with respect to the base. The upper portion of the head supporting assembly terminates in a tube having means engageable with portions of the plenum to provide for passage of air through the head support and into the interior of the plenum, while also permitting adjustment of the position of the head assembly with respect to the head mounting assembly. The cover unit includes an adjustable vent assembly permitting air to be exhausted from the interior of the assembly to the atmosphere after the drying air has escaped from the plenum. Means is provided to direct the flow of air to particular portions of the hair which are ordinarily difficult to dry.

3,775,862

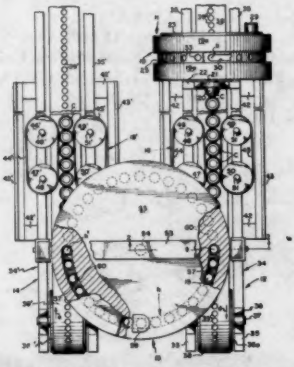
SELF CLEARING CONTAINER PART CONVEYOR SYSTEM

Gene F. Emge, Bay City, Mich., assignor to Koehring Company, Milwaukee, Wis.

Filed Oct. 26, 1971, Ser. No. 192,471

Int. Cl. F26b 25/00

U.S. Cl. 34—105 **4 Claims**



A plastic container part conveyor mechanism for use in conjunction with a printing machine which decorates the an-

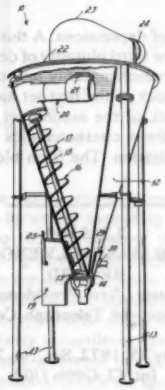
nular side walls of container parts. The conveyor mechanism is used to move parts leaving the printing machine past a series of dryers for drying the ink on the container parts prior to moving them to a container assembly machine wherein the parts are friction welded together to form containers. The mechanism includes a pair of oppositely directed conveyor sections, providing an interrupted path of travel, and a generally horizontally disposed rotary disc or turntable having openings communicating with a source of vacuum for lifting the parts off one conveyor section and transferring them to the oter conveyor section. A similar vertically disposed rotatably mounted section disc can be used to supply the container parts to the upstream conveyor section.

3,775,863

METHOD AND APPARATUS FOR DRYING PARTICULATE MATERIALS

Louis B. Updegrove, Terrace Park, Ohio, assignor to The J. H. Day Company, Cincinnati, Ohio

Filed July 20, 1972, Ser. No. 273,647
Int. Cl. F26b *17/12*
U.S. Cl. 34—166 **14 Claims**



A method and apparatus for drying a particulate material such as resin pellets, fine chemicals, pigments, cosmetic powders and the like. The method involves mechanically agitating the material while sweeping it with pre-dried, heated air. The preferred form of apparatus includes a frustoconical tank having an agitator screw which is rotated upon its own axis to lift material and is simultaneously orbited around the wall of the tank. Air or other gas which has been heated and dried is introduced at the bottom of the tank and flows upwardly through the material. The air, carrying with it moisture released by the material, is discharged at the top of the mixer. The material can be mixed, granulated and dried in a single operation.

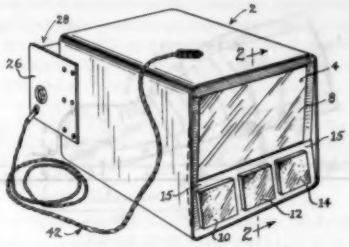
3,775,864

RESPONSE-EVOKING APPARATUS

John M. Bisinger, Oak Park, and David H. Verwolf, Chicago, both of Ill., assignors to Multi-Channel Response Corp., New York, N.Y.

Continuation-in-part of Ser. No. 854,956, Sept. 3, 1969, abandoned. This application Feb. 1, 1971, Ser. No. 111,428
Int. Cl. G09b *7/08*
U.S. Cl. 35—9 A **10 Claims**

A machine for evoking responses from observers is provided by a display surface having discrete images projected upon discrete sections of the display surface. An observer may indicate his response to the images displayed or his response to an audible question by displacing one of the discrete sections. Control circuits responsive to data on the medium on which the images are stored for projection upon the display



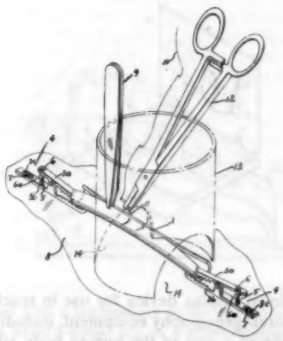
surface condition means to indicate the reaction of the observer and control the various modes of operation of the machine.

3,775,865

SIMULATOR FOR TEACHING SUTURING TECHNIQUES

Robert L. Rowan, 34 E. 67th St., New York, N.Y.

Filed July 24, 1972, Ser. No. 274,169
Int. Cl. G09b *23/28*
U.S. Cl. 35—17 **6 Claims**



A method and an arrangement for teaching suturing techniques in surgery. A tube of plastic material is adjustably mounted on a surface by means of two clamps, the positions of which are adjustable as well as their spring tensions. A portion of the tubular wall has been cut or removed. This plastic tube simulates various tissues of the human body. A cylinder having a pair of confronting cut-outs is placed on the supporting surface on top of the tube, this cylinder simulates a body cavity of the human body in which a surgical operation is to be carried out. The separated tubular walls of the plastic tube can be sewn together by means of known suturing tools and techniques thereby simulating a natural surgical operation and teaching various suturing techniques.

3,775,866

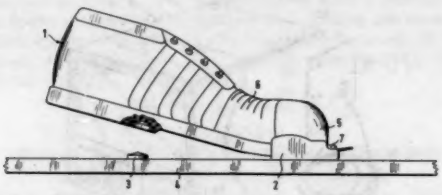
STABILIZER FOR BOOTS FOR CROSSCOUNTRY SKIING

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

Filed Mar. 14, 1972, Ser. No. 234,554
Claims priority, application Austria, Mar. 25, 1971, A 2571/71
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **15 Claims**

The stabilizer comprises a rigid soleplate, which transmits longitudinal forces and is disposed below the heel and extends

forwardly, at most, to the ball region of the foot. Two supporting elements extend upwardly from the longitudinal sides of the soleplate. At least one of said supporting elements is



hinged to the soleplate. The supporting elements embrace the ski like a bandage at least with their end portions. Means for bracing the supporting elements relative to each other are secured to the supporting elements.

3,775,867

INSTRUCTIONAL DISPLAY DEVICE

Thomas T. Christenberry, Jr., 932 Henley Pl., Charlotte, N.C.

Filed July 18, 1972, Ser. No. 272,773

Int. Cl. G09b *23/30*

U.S. Cl. 35—17 **6 Claims**

An instructional display device for use in teaching and in operating teleorentgenography equipment, including a hollow rubber facsimile of a part of the human body attached to a support and a thin rod extending through the facsimile in a predetermined path. The hollow facsimile is arranged to assume an expanded position at which the rod simulates the path of an X-ray beam, and a compressed position at which the facsimile is conveniently stored in a box-like container or against the back surface of an adjacent support member. The support member may also include a representation of an actual X-ray photograph taken of such part of the human body along a line corresponding to the path of the rod through the expanded facsimile. Also, written materials may be provided for indicating the purpose and procedure for taking the particular X-ray indicated by the display device.

3,775,868

FORM BOARD FOR CHILD EDUCATION

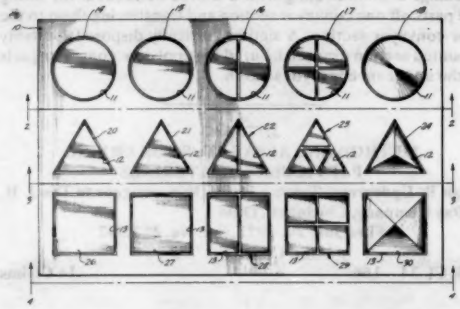
H. Daniel Moore, 701 Orange Grove, Apt. 106, South Pasadena, Calif.

Continuation-in-part of Ser. No. 86,252, Nov. 2, 1970, abandoned. This application Feb. 12, 1973, Ser. No. 331,807

Int. Cl. G09b *19/00*

U.S. Cl. 35—22 A **23 Claims**

A flat base has a first plurality of flat depressions, a second plurality of flat depressions, and a third plurality of flat depressions arranged in adjacent rows so the depressions form columns perpendicular to the rows. The first plurality of depressions have identical circular shapes; the second plurality of depressions have identical triangular shapes; and the third plurality of depressions have identical square shapes. A first set of geometric form blocks equal in number to the first plurality of depressions each have bases shaped to fit interchangeably into the first plurality of depressions. A second set of form blocks equal in number to the second plurality of depressions each have bases shaped to fit interchangeably into



the second plurality of depressions. A third set of form blocks equal in number to the third plurality of depressions each have bases shaped to fit interchangeably into the third plurality of depressions. Each block of the first set has a characteristic in common with a block of the second set and a block of the third set. Some of these characteristics are height, profile, color, and fractionalization. The form blocks are hollow and open on one side.

3,775,869

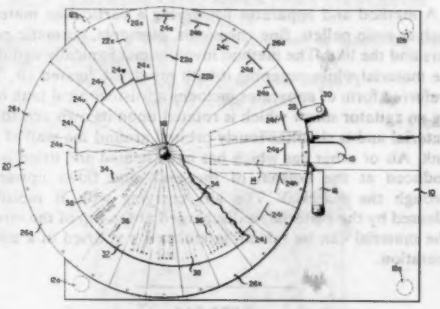
APPARATUS FOR MANUALLY ENCODING A DATA RECORD

Calvin F. Opperthauser, New Providence, N.J., assignor to American Telephone and Telegraph Company, New York, N.Y.

Filed May 25, 1972, Ser. No. 256,948

Int. Cl. G09b *1/00*

U.S. Cl. 35—48 R **9 Claims**



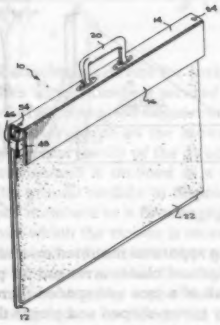
The apparatus comprises a base including a slot for accommodating an individual data record in a plane parallel to the upper surface thereof, and a disk rotatably mounted on the base so as to overlie the slot. The disk is divided into a multiplicity of segments, each of which includes a column of marking holes. The spacing between the marking holes in each column is the same as the spacing between rows of data locations on the data record, a first column of marking holes being located at the same distance from the axis of rotation as one of the columns of data locations on the data record when posi-

tioned within the slot in the base. Each successive column of marking holes is radially displaced from the adjacent column of marking holes a distance that corresponds to the spacing between columns of data locations on the data record.

3,775,870
CLAMP-TYPE FABRIC DISPLAY MEANS

Carl L. Griggs, Dalton, Ga., and George Hansman, Cleveland, Ohio, assignors to National Service Industries, Inc., Atlanta, Ga.

Filed Dec. 19, 1972, Ser. No. 316,569
Int. Cl. G09f 5/02
U.S. Cl. 35—55 **10 Claims**



A carpet or fabric sample display means is disclosed including a base panel, a forwardly extending relatively narrow top panel connected to the top edge of the base panel and a downwardly extending front panel hingedly connected to the forward edge of the top panel opposite the connection to the base panel with first and second sample clamp means being attached adjacent the upper side edges of the base panel with each clamp comprising a cantilever spring plate depressable downwardly to clamp a sample in position, a slide latch is mounted in a base plate to which the spring plate is connected and is movable over the spring plate to hold the spring plate in clamping position so that samples can be inserted and removed easily without damage to the sample.

ERRATUM

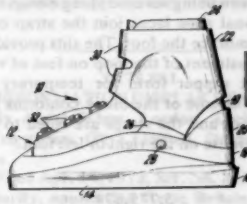
For Class 36—2 see:
Patent No. 3,775,866

3,775,871
RAISED STOP FOR SKI BOOT OF THE PIVOTED ANKLE CUFF TYPE

Richard A. Serko, 26 Craig St., Jericho, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,493
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **6 Claims**

A ski boot having a raised stop attachable thereto for limiting rearward movement, beyond that attainable in a conventional boot, of an ankle cuff which is pivotally attached in the region of a wearer's ankle to a lower shell of the boot. The lower shell has a raised back wall to which a quarter is secured, the top edge of the quarter being below the top edge of the back wall. Rearward pivotal movement of the ankle cuff normally is limited by abutment of the lower edge of this cuff against the top edge of the quarter. The stop has an arcuate thin tongue from the lower edge of which a perpendicular shoulder projects. When the tongue is inserted between the exterior surface of the back wall and the interior surface of the ankle cuff to such an extent that the lower surface of the shoulder seats on the top edge of this back wall, the stop

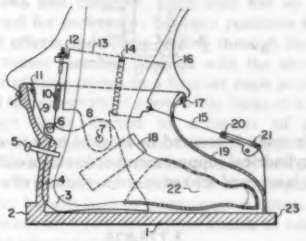


presents a raised surface to further restrict rearward pivotal movement of the ankle cuff, thereby enabling the wearer to maintain greater control over a ski attached to the boot which he could not do with the more extensive rearward movement inherent in the lower height of conventional quarters.

3,775,872
SKI BOOT WITH LATCHABLE ARTICULATED LEG HOLDER

Richard K. Rathmell, 12 Pine Tree Rd., Ramsey, N.J.

Filed Dec. 21, 1972, Ser. No. 317,286
Int. Cl. A43b
U.S. Cl. 36—2.5 AL **13 Claims**

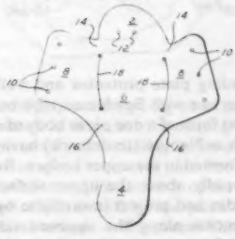


A ski boot with a leg-holding collar and constraining means to hold the skier's lower leg in a substantially fixed position relative to the ski, and means to release the constraints to allow the skier's heel to be raised and the skier's leg to pivot forward or backward relative to the ski.

3,775,873
DISPOSABLE PLASTIC SLIPPER

Donald I. Small, 60 Woodward Rd., West Springfield, Mass.

Filed Jan. 26, 1973, Ser. No. 326,887
Int. Cl. A43b 3/12
U.S. Cl. 36—11.5 **4 Claims**



A slide-on or step-in slipper or sandal of the disposable type to be formed from a flat blank, preferably of foamed

polyethylene sheet material, having a sole member with flat toe, heel and instep portions and a pair of opposed arch embracing strap members extending from the sides of the instep. The inner edges of the straps are foldably connected to the instep only at front and rear portions thereof, the material of the blank therebetween being severed along elongated arcuate slit lines. Conventional shoe laces join the strap outer edges to form a loop to embrace the foot. The slits provide expandable openings for adjustment of the loop on feet of varying shapes and an efficient slipper form for temporary or extended periods of use. The sole of the blank conforms to the normal curvature of a foot and the straps are laced to overlie either face of the sole for use on the right or left foot.

3,775,874

SPORTS SHOE SPIKES

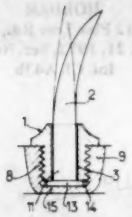
Jean Bonneville, Ronchamp, France, assignor to Nouvelle Societe Bruey S.A., Ronchamp, France

Filed Dec. 22, 1971, Ser. No. 210,941

Claims priority, application Switzerland, Dec. 22, 1970, 19034/70

Int. Cl. A43c *15/00*

U.S. Cl. 36—67 D **3 Claims**



A needle spike is secured in an axial hole in an externally threaded cylindrical support member having a collar by means of which it is screwed into an insert in the sole of a sports shoe.

3,775,875

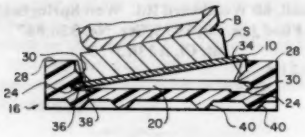
SKI BOOT BINDING PLATE PROTECTOR AND WALKING AID

Daniel A. Dvorsky, R. R. No. 3, Indian Lookout 77, Iowa City, Iowa

Filed Feb. 8, 1973, Ser. No. 330,699

Int. Cl. A43b *13/22*

U.S. Cl. 36—72 A **2 Claims**



A ski boot binding plate protector and walking aid especially designed for use with Spademan type boot plates. The protector takes the form of a one piece body of a molded flexible material, such as Neolite (trademark) having a boot plate receiving recess formed in the upper surface. Retaining shoulders project upwardly above the upper surface of the body along opposite sides and project inwardly to overlie the boot plate receiving recess along the opposed sides. The plate receiving recess is formed with side walls conformed in shape to the side edges of the boot plate, and when mounted on the boot plate, the retaining shoulders overlie and grip those portions of the plate which project beyond the side of the boot to retain the protector in position upon the boot plate. The upper edges of the shoulders are complementary in shape to the corresponding side edges of the boot plate and are beveled downwardly and inwardly to assist in mounting the protector on the plate.

3,775,876

TREE MOVING APPARATUS

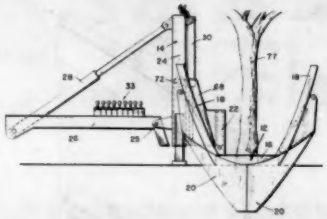
John D. May, P. O. Box 367, Conway, Ark.

Continuation of Ser. No. 66,498, Aug. 24, 1970, abandoned.

This application Sept. 18, 1972, Ser. No. 290,110

Int. Cl. A01g *23/02*

U.S. Cl. 37—2 R **1 Claim**



A tree moving apparatus mounted on a vehicle and having a plurality of reciprocal blades arranged for positioning thereof around the trunk of a tree and spaced therefrom. The blades are substantially spoon-shaped and pierce the earth surrounding the tree at an angle with respect to the horizontal resulting in an arcuate configuration for the sidewalls of the area being excavated by the blades, and in such a manner as to meet beneath the tree in the form of a substantially semi-spherical container. The earth surrounding the tree is thus severed by the blades and the major roots of the tree are balled or encased within the closed container formed thereby. An inner frame bears against the exposed surface of the ground surrounding the tree and circumscribed by the blades for securely retaining the balled roots in the closed container. The container housing the tree and balled roots may then be elevated from the normal growing position of the tree and tilted to a substantially horizontal position whereupon the tree and contained roots may be transported to a new site for transplanting of the tree. A leveling device facilitates transplanting of the tree in a substantially true vertical position at the new site.

3,775,877

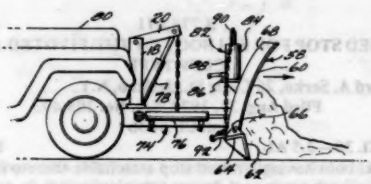
BACKPLOWING SNOWPLOW ATTACHMENT

Ernest J. Gove, Sr., Rt. 151, Newington, N.H.

Filed Sept. 28, 1972, Ser. No. 292,940

Int. Cl. E01h *5/04*

U.S. Cl. 37—42 VL **6 Claims**



A conventional snowplow attachment for the front of a small vehicle is provided with controllable means for overcoming the springs of the attachment's conventional safety-release mechanism, which permits at least the lower edge portion of the blade to pivot to the rear when it encounters an obstacle, to retain the blade's lower edge portion in such rearwardly and downwardly-inclined position for backplowing purposes.

3,775,878

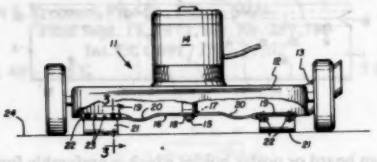
SNOW REMOVAL ATTACHMENT DEVICE FOR ROTARY-TYPE MOWERS

Charles E. Beckner, 2000 W. Custer Pl., Denver, Colo.

Continuation of Ser. No. 858,714, Sept. 17, 1969, abandoned. This application Aug. 23, 1971, Ser. No. 174,226

Int. Cl. E01h 5/04

U.S. Cl. 37—43 L 6 Claims



A snow-removal attachment device for rotary-type mowers has resilient, flap-like wiper members secured in a dependent manner at each end of an elongated support member which in turn mounts on the rotary shaft of the mower motor. Each wiper member extends rearwardly of the direction of rotation of the support member and is inclined at a relatively small angle relative to the ground surface to dispose a trailing end portion of the wiper members in a firm engagement with the ground surfaces over which the mower is moved. One form of the device has the ends of a blade-like support member twisted in opposite directions and another form of the device has the wiper members hingedly supported and is provided with adjustable biasing means to change the angle of inclination of the wiper members and the extent of its contact against the ground surface.

3,775,879

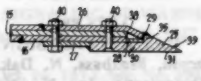
BUCKET FOR EARTH MOVING MACHINES

Donald Jonathan Quick, Highton, Australia, assignor to International Harvester Company, Chicago, Ill.

Filed July 28, 1972, Ser. No. 276,007

Int. Cl. E02f 3/00

U.S. Cl. 37—118 R 3 Claims



A bucket for an earth-moving machine made of aluminium alloy and having a cutting edge assembly fabricated from steel, enclosing the forward edge of the bottom of the bucket.

3,775,880

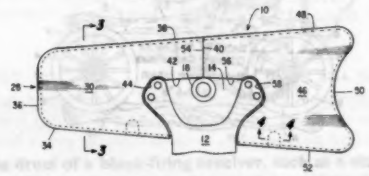
PRESS HEAD INSULATOR

James Thomas Gilstrap, P.O. Box 672, Waxahachie, Tex.

Filed Jan. 2, 1973, Ser. No. 320,646

Int. Cl. D06f 31/36

U.S. Cl. 38—66 3 Claims



Disclosed is a two-piece insulator for a press head. Both pieces of the insulator are molded from low thermal transmission material. The pieces are formed with a uniform wall thickness adjacent to the heating areas of the head. The two pieces are made to conform to the exterior of the head and each is provided with edges which abut when the pieces are in position on the head. Clearance areas are provided on the pieces for the various supports and utility connections of the head.

3,775,881

INFORMATION DISPLAY DEVICE

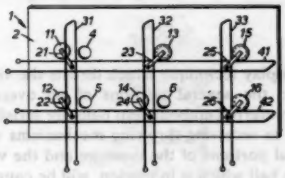
Hassan Paddy Abdel Salam, London, England, assignor to Universal Telewriters (Pty) Limited, Durban, Republic of South Africa

Filed Apr. 14, 1972, Ser. No. 243,950

Claims priority, application Great Britain, Apr. 14, 1971, 9,406/71

Int. Cl. G09f 9/30

U.S. Cl. 40—2 C 9 Claims



Information display apparatus includes an opaque member having a two-dimensional array of light-transmissive areas arranged in rows and columns. Each area has an individual shutter pivoted for movement between positions in which it has different effects upon light passing through the area by a magnetic actuator member coupled with the shutter. Magnetic field producing means in a first set each produce fields limited to all the actuators of a row while those of a second set each produce fields limited to actuators of a column. Predetermined changes in electric currents applied to the row and column field producing means uniquely associated with an actuator will produce reversal of the shutter position. The actuators may be soft-iron or permanent magnets. The field producing means for a row may either enable or inhibit actuator movement when energized.

3,775,882

TAG

Philip T. Wheeler, Dewitt, Mich., assignor to The Hardy Company, Lansing, Mich.

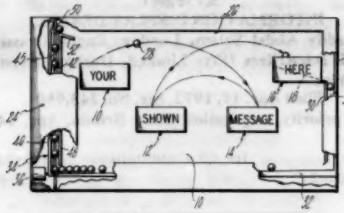
Filed Dec. 22, 1971, Ser. No. 210,957

Int. Cl. G09f 3/18

U.S. Cl. 40—10 C 6 Claims

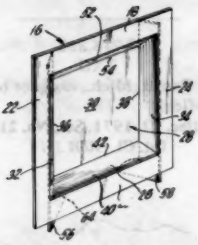
A tag for identifying or describing objects such as plants or other nursery stock is formed by stamping a pattern from a flexible sheet material and including in the pattern a crescent-shaped aperture adapted to receive a barbed tab. The tab is on the end of an arm formed in the body of the tag and forms an opening through which a stalk of the plant or the like passes when the tag is attached to the plant. The crescent-shaped aperture is uniquely shaped together with the barbed tab to securely hold the arm in place around the stalk when the tag is attached thereto.

3,775,883
MESSAGE ACCENTUATION DEVICE
Henry M. Atkins, 3 King Arthur Way, Newington, Conn.
Filed June 2, 1971, Ser. No. 149,221
Int. Cl. G09f *19/02*
U.S. Cl. 40—106.25 2 Claims



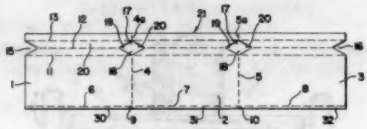
An active display technique which directs the viewer's eye sequentially to the several portions of an overall written message. In a preferred embodiment balls are serially directed through space to receiving-throwing mechanisms which support the several portions of the message and the viewer, following a single ball which is in motion, will be caused to scan the message in the proper order.

3,775,884
SELF-ERECTING DISPLAY BOX
Irving Smith, c/o Arrow Art Finishers, 1201 Evergreen Ave., Flushing, N.Y.
Filed June 23, 1972, Ser. No. 265,722
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 6 Claims



A self-erecting shadow box made of paperboard or the like, for example for use as a display means or a greeting card, includes an open front frame behind which is placed a foldable rigid sheet. An elastic member is used to urge toward each other like portions of side panels of the sheet which are adjacent the central portion of the sheet so that the central portion is moved rearwardly, thus creating a rearwardly extending box. When viewed from the front, the central portion of the sheet is rearward of the open frame, the side panels of the sheet converge and the top and bottom panels of the sheet converge or extend horizontally rearwardly, thus creating an illusion of additional depth. The shadow box is initially contained within an envelope which holds it flat. When it is removed therefrom, the elastic member automatically opens the shadow box.

3,775,885
SIGN BOARD OR POSTER HOLDER
John B. Shepherd, 560 Lake Forest Dr., Bay Village, Ohio
Filed July 28, 1972, Ser. No. 276,125
Int. Cl. G09f *1/00*
U.S. Cl. 40—124.1 6 Claims



A sign board or poster holder which is preferably formed of a foldable material, such as corrugated paper board, fabricated board, foldable plastic material, or paper mache, is provided with three upper longitudinal score lines, the central score line of which passes through the apices of the acute angles of spaced cut-out parallelograms. Spaced vertical score lines are also provided which pass through the apices of the obtuse angles of the parallelograms and extend upwardly to the top edge of the foldable material. Acute angle cut outs are arranged between the upper and lower top score lines and short slits are cut from the bottom of the board or holder upwardly in alignment with the vertical score lines and lower longitudinal score lines are formed so that bottom flanges of the foldable material may be bent outwardly to support the sign board or poster holder. The foldable material may be bent downwardly successively on the upper score lines to provide a reinforcement for the upper portion of the panels. The sign board or poster holder is then bent on the vertical score lines. This causes the acute angles of each of the parallelograms to engage each other to forn two straight lines and the acute angles at the ends of the foldable material between the upper and lower score lines to form a third straight line. Pressure sensitive adhesive tape may be applied to the opposite ends of the panels to form the final board or holder and to lock the parts together. Pressure sensitive adhesive tape may also be applied to the outwardly extending bottom flanges to affix and support the sign board or poster holder.

3,775,886
ILLUMINATED SIGN
Ronald H. Anderson, Maxbass, N. Dak., assignor to The Raymond Lee Organization, Inc., New York, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,375
Int. Cl. G09f *13/00*
U.S. Cl. 40—130 R 3 Claims

An illuminated sign comprises a pair of spaced wagon wheels having a plurality of spokes comprising elongated lighted tubes. A rustic log is provided at the tops of the rims of

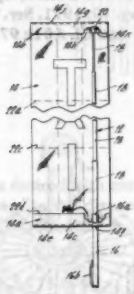
the wheels and another rustic log is provided at the bottoms of the rims of the wheels. Illuminated advertising material is provided in the area bordered by the wheels and the logs. Santa Claus extends from the waist up from the top one of the logs wearing a cowboy hat on his head and a buckskin glove on a hand.

3,775,887

COLLAPSIBLE AND PORTABLE SIGNALLING DEVICE

Virginia S. Precourt, Pine St., Dover, Mass.

Filed Sept. 11, 1972, Ser. No. 287,799
Int. Cl. G09f *17/00, 21/02*
U.S. Cl. 40—125 G 7 Claims



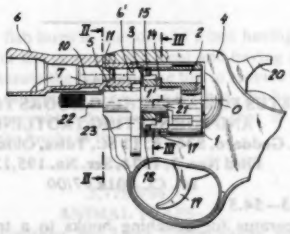
A collapsible and portable signalling device including a collapsible support member and a foldable sign attached thereto. The collapsible support member includes a base member, intermediate telescoping members received within the base member and a supporting end member. One end of the foldable sign is attached to the base member and the other end is attached to the supporting end member so that in a collapsed position the sign ends are adjacent to and abut each other. Transverse and longitudinal fold lines are formed within the foldable sign so that it may be folded into a small portable package.

3,775,888

HAND GUN FOR SIGNALING OR WARNING PURPOSES

Gunter Horst Rohm, Muhlstrasse 9, 7927 Sontheim/Brenz, Germany

Filed Oct. 16, 1972, Ser. No. 298,017
Claims priority, application Germany, Oct. 26, 1971, G 71 40 399.1
Int. Cl. F41c *3/04, 3/02, 3/06*
U.S. Cl. 42—58 10 Claims



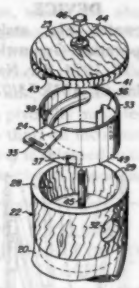
The drum of a blank-firing revolver, such as a starter gun, has axial bores divided into longer rear portions, serving as cartridge chambers, and shorter front portions, acting as venting channels, by a ring centered on the drum axis which projects partly into these bores from within. Another ring, coaxial with the first one but forwardly spaced therefrom, projects partly into the bores from without; the two rings are of substantially greater hardness than the drum material so as to deflect any drill bit into the bore wall if an attempt is made to widen any bore into a seat for a projectile to be fired by the detonation fumes. A muzzle in a discharge aperture of the gun body, with which the venting channels are successively alignable, is held in position by a spike passing generally radially through the muzzle bore so as to restrict the effective cross-sectional area thereof, thereby preventing the muzzle from giving guidance to any projectile lodged therein.

3,775,889

POWDER HORN

Karl E. Wilburn, Rt. 2, Cedarville, Ohio

Filed Apr. 17, 1972, Ser. No. 244,751
Int. Cl. F41c *27/00*
U.S. Cl. 42—90 16 Claims



A powder horn or storage pouch in which a body installed as a plug in one end of the horn or pouch serves as a magazine receptacle for lead balls and explosive caps, the body being part of an assembly including a part adjustable to dispense the balls and caps separately and singly from respective areas of containment.

3,775,890

FISH IMPELLER

Mario J. Puretic, 259 6th Ave. N., Tierra Verde, Fla.

Continuation-in-part of Ser. No. 74,598, Sept. 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 51,160, June 30, 1970, abandoned. This application Feb. 23, 1972, Ser. No. 228,515
Int. Cl. A01k *79/00*
U.S. Cl. 43—6.5 13 Claims

Fish handling apparatus for lifting fish may be used, for example, to transfer fish from a net alongside a fishing boat onto

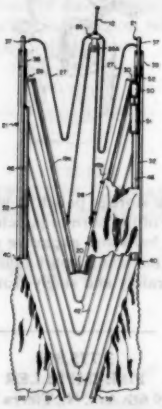
a fishing boat. The apparatus includes an enclosure arranged in a loop and having a fish discharge aperture formed in its upper portion. When fish are to be removed from the net, the lower portion of the enclosure is positioned within the net. Power-driven chains are looped about the interior of the enclosure. A plurality of baskets are attached to the chains for propelling fish upwardly from the lower portion of the enclosure upwardly through the fish discharge aperture onto the deck of the fishing boat. A unique basket construction permits the water to be readily drained as the fish are moved upwardly. A modification employs a curved enclosure that affords a smooth, unbuckled and extremely rigid construction. A further modification of the apparatus employs an enclosure having a laterally offset upper portion for improved discharge of fish. Means for manipulating the enclosure between its stowed and operating positions aboard the fishing boat are provided.

3,775,891

SHRIMP TRAWL WITH ELECTRONIC EXCITATION DEVICE

John K. Holt, Clearwater, Fla., assignor to International Oceanographic Corporation, Greenwich, Conn.

Filed Dec. 17, 1971, Ser. No. 209,195
Int. Cl. A01k *73/02*
U.S. Cl. 43—9 **7 Claims**



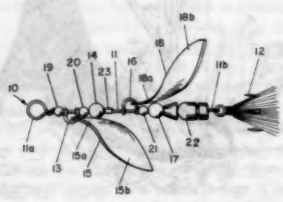
A shrimp trawl of the beam type including a frame which is collapsible for storage, side frame members mounting an array of electrodes extending transversely between said frame members and battery powered capacitors mounted on said frame members to transmit pulsed electrical current to said electrodes.

3,775,892

FISHING LURE

John F. Bennetts, Antigo, Wis.

Filed Apr. 27, 1972, Ser. No. 247,996
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.14 **1 Claim**



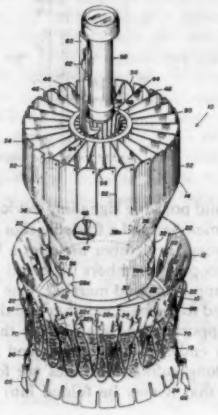
A fishing lure assembly having a pair of blades diagonally twisted in opposed directions and attached to an elongate shaft by rotatable clevises. When the lure is pulled through the water the blades rotate in opposite directions about the axis of the shaft. a graduated pair of beads received on the shaft rearwardly of each attaching clevis to cause the oppositely directed blade rotation to take place in close proximity to a body form toward the rear of the shaft. A spacer element is fixedly attached to the shaft between the blades for maintaining the blades in spaced relation during use.

3,775,893

TROTLINE DISPENSER

Roger V. McGee, Jr., 6011 Gaston, Apt. 216, Dallas, Tex.

Filed Aug. 19, 1971, Ser. No. 173,041
Int. Cl. A01k *97/06*
U.S. Cl. 43—54.5 A **10 Claims**



A trotline dispensing device includes a fixed spool having a recessed reel section for receiving a trotline wound thereupon, and a series of hook-retaining compartments positioned on one end of the spool and opening longitudinally of the spool for releasably retaining either unbaited or baited fishhooks of the trotline. A retaining member, such as a handle, is carried at the opposite end of the spool. The trotline is dispensed from the apparatus by pulling the trotline longitudinally from the reel (parallel to the axis of the reel), thereby removing hooks sequentially from the hook-retaining compartments.

3,775,894

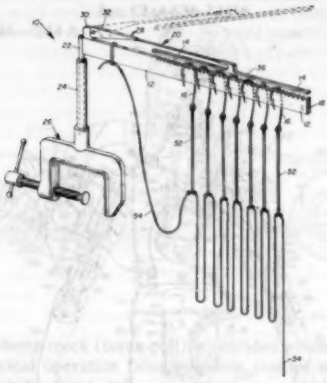
APPARATUS FOR ATTACHING HOOKS TO TROTLINE AND FOR SETTING TROTLINE

Robert V. Goddard, 8344 E. 11 St., Tulsa, Okla.

Filed Nov. 3, 1971, Ser. No. 195,125
Int. Cl. A01k *97/00*
U.S. Cl. 43—54.5 A **7 Claims**

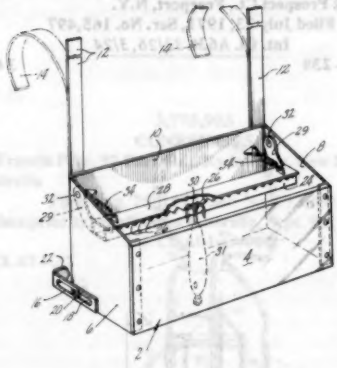
An apparatus for attaching hooks to a trotline and for setting the trotline comprises a body portion having a vertical shaft received swivelably in a clamp member and a horizontally extending hook supporting arm. The hook supporting arm has a plurality of serrations along the upper edge so that each hook of a trotline may be positioned within each serration. A hook retaining member is pivotally attached to the hook supporting arm near the aforesaid shaft in a manner that

the lower surface of the hook retaining member may lightly hold each hook within its respective serration. Then, the trot-



line may be played out as desired with each hook in turn moving along the serrated edge to the dispensing end of the arm without entanglement of any attachment line.

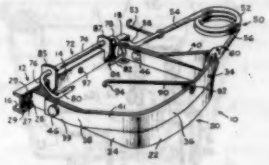
3,775,895
CONTAINER FOR FISH LURES
Frank J. Jachim, 1312 Summer St., Hammond, Ind.
Filed Sept. 26, 1972, Ser. No. 292,430
Int. Cl. A01k *97/04*
U.S. Cl. 43—54.5 R **2 Claims**



A holder for fish lures in the form of a box having supports for hooking over the gunwale of a boat and having a notched bar extending across the box near the top to receive the hooks on the lures so they may hang within the box, the hooks being engaged by a movable clamping member that in operative position holds the hooks in the notches.

3,775,896
ANIMAL TRAPS
Joseph Aldege Gauthier, and Louis Marcel Shank, both of R.R. 2, Sturgeon Falls, Ontario, Canada
Filed June 14, 1972, Ser. No. 262,459
Int. Cl. A01m *23/30*
U.S. Cl. 43—81 **9 Claims**

An animal trap of simple but sturdy construction having an elongated rigid spine to which a ground-engaging frame formed of strip material is secured. A movable frame of strip material is pivoted to the ground-engaging frame for pivotal movement between an upwardly extending open position and a forwardly extending closed position in which an undersurface of a cross-head of said movable frame abuts a top surface of a longitudinal section of said ground-engaging frame. At least one helically wound spring having tangentially extending arms terminating in loops is provided for urging the trap into its closed disposition. Both the loops encircle a side arm of the



ground-engaging frame, while one abuts the spine and the other is urged by the spring against a side arm of the movable frame. A bait-holding frame pivotally mounted on the spine has a length less than that of the movable frame and includes an elongated member adapted releasably to engage the inner end of a retaining arm pivotally mounted on the cross-head of the movable frame so that, on movement of the bait-holding frame, the retaining arm is released in turn to allow the spring to force the trap into its closed disposition.

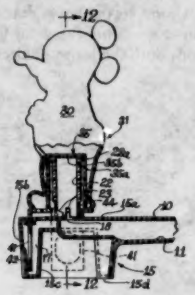
3,775,897
INTERSECTION DEFLECTOR FOR TOY VEHICLE TRACKS
George Soulakis, North Hollywood, and Jimmie L. Whittington, Manhattan Beach, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.
Filed Aug. 17, 1972, Ser. No. 281,570
Int. Cl. A63h *19/32*
U.S. Cl. 46—1 K **10 Claims**

A deflector apparatus which can be connected at the intersection of a track layout that forms a figure 8, including a deflector member which can be raised to make a toy vehicle turn a 90° corner so it repeatedly traverses only one loop of the figure 8 or which can be lowered to allow toy vehicles to move straight ahead through the intersection to traverse all of the layout. The deflector member is slideably mounted for up and down movement in the deflector frame and has concave surfaces on either side which are tangent to the outer walls of the tracks when the deflector member is raised to a deflecting position.

3,775,898
MULTIPLE STREAM BUBBLE BLOWER
Jerome Barton Kalish, Highland Park, Ill., assignor to Chemtoy Corporation, Chicago, Ill.
Filed Oct. 20, 1972, Ser. No. 299,242
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **3 Claims**

A child's bubble blowing toy having its own reservoir for bubble-forming fluid and at least one member having an aperture to acquire a film of the fluid, the member being operable between a lower position whereat the aperture in the member

acquires a charge of fluid and a higher position whereat the child's breath blows the film out as a bubble. The member is raised by the pressure of air delivered to the toy and move-



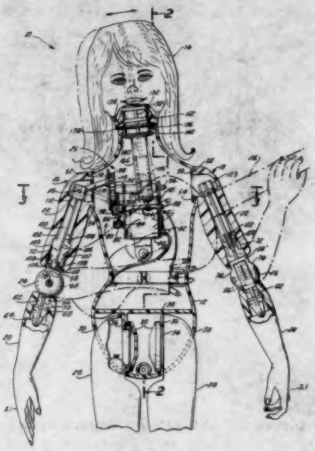
ment thereof occurs substantially concurrently with forming of the bubble. Cessation of blowing allows the member to descend.

3,775,899
ANIMATED BUBBLE TOY
Tobin Wolf, 447 Essex Ave., Bloomfield, N.J.
Filed July 12, 1972, Ser. No. 271,121
Int. Cl. A63h *33/28*
U.S. Cl. 46—7 **18 Claims**

A bubble forming toy having a spill-proof container of inverted frusto-conical form for a bubble forming solution and having a cover provided with a slot through which a wall with an opening therethrough moves. The wall is moved out of the solution by an air powered device, the air then being blown through the opening to form bubbles.

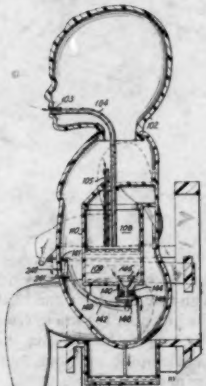
3,775,900
TOY DOLL
Herbert Thorn, Flushing, and Michael Ieda, Fort Solanga, both of N.Y., assignors to Ideal Toy Corporation, Hollis, N.Y.
Filed May 1, 1972, Ser. No. 248,996
Int. Cl. A63h *11/00*
U.S. Cl. 46—120 **13 Claims**

A toy doll having a torso and a pair of arms includes a selectively operable electric motor mounted in the torso and connected through a transmission to the forearm portion of one of the arms in order to oscillate that forearm portion in a selectable predetermined plane upon actuation of the drive means. The driven forearm is connected to its associated upper arm portion by an articulated joint which is rotatably mounted in the upper arm and drivingly connected to the transmission system so that the upper arm portion remains motionless while the forearm portion is oscillated. The electric motor also is operably connected to the doll's head to oscillate the head



from side to side while simultaneously oscillating the forearm in order to simulate human movements while playing a musical instrument or the like.

3,775,901
LIQUID ELIMINATING DOLL WITH VALVE MEANS ACTUATED BY EXTERNAL MAGNETIC DEVICE
Julius Ellman, 1672 E. 7th St., Brooklyn, N.Y., and George Lerner, 12 Prospect Ct., Freeport, N.Y.
Filed July 23, 1971, Ser. No. 165,497
Int. Cl. A63h *33/26, 3/24*
U.S. Cl. 46—239 **3 Claims**



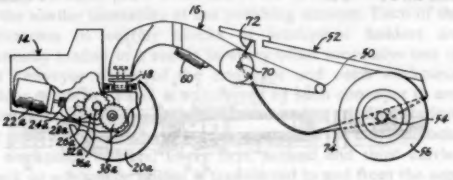
A child's doll is provided with an internal reservoir into which a liquid may be introduced through the mouth orifice of the doll. The reservoir is also provided with a discharge valve whose opening is effected by the close proximity of a permanent magnet; such a magnet being provided attached to a training seat with chamber-pot. The doll is provided with an orifice at its lower extremity through which it can eliminate fluid when placed on the training seat.

3,775,902

TOY TURNA-PULL

Robert A. Gagnon, Star Route 2, Box 944, Trail, Oreg.

Filed Feb. 22, 1972, Ser. No. 228,212
Int. Cl. A63h 33/26
U.S. Cl. 46—244 A 4 Claims



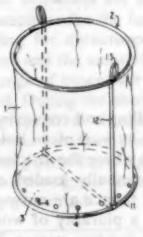
A toy dump truck (turna-pull) is provided which is adapted for electrical operation from a remote control station. The truck includes front and rear sections connected through a vertical pivot. The rear section includes a pair of supporting wheels which may be fast on a transverse shaft and a carrying tray which is tiltable back and forth between a level carrying position and a sharply tilted dumping position. The forward section includes traction wheels which may be selectively, individually driven forward or backward for setting the wheels to travel in a curved or straight path when both are subsequently, simultaneously operated in the same direction. Reversible motors are provided for each of the front wheels and for the rocking of the tray. The remote control station includes a current supply means, such as a dry cell or a rechargeable power unit, and all required switches, enclosed in a common housing. All conductors which run between the control station and the vehicle form parts of a single cable.

3,775,903

CONTAINERS

John Francis Pike, 57 Park Rd., Rydalmere, New South Wales, Australia

Filed Aug. 20, 1971, Ser. No. 173,591
Claims priority, application Australia, Sept. 9, 1970, 2478
Int. Cl. A01g 9/02
U.S. Cl. 47—37 4 Claims



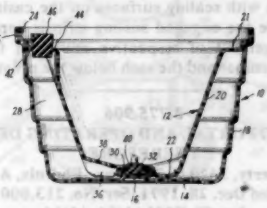
A container intended principally for use as a plant pot, made of flexible plastics material, of generally cylindrical shape and having a semi-rigid or flexible bottom and stiffening means around at least the upper periphery of the container; such features as drainage holes, reinforcing straps and carrying handles may optionally be provided.

3,775,904

SELF-WATERING FLOWER POT

James R. Peters, Chicopee, Mass., assignor to Universal Products Development Corporation, Simsbury, Conn.

Filed July 6, 1971, Ser. No. 160,009
Int. Cl. A01g 27/00
U.S. Cl. 47—38.1 7 Claims



A self-watering flower pot has a unitary, double-walled construction comprising an outer shell, a potting receptacle therewithin, and a water-receiving chamber in the space therebetween. A cavity and a channel both of which open downwardly, are formed in the underside of the bottom wall of the inner reeptacle, and the channel slopes upwardly from the cavity toward the inside wall to define an air flow path. The container has a sealable opening for the introduction of water into the chamber, and the bottom wall of the potting receptacle has an aperture communicating with the cavity formed therein. Water passing by capillary action into the inner receptacle from the chamber creates a vacuum in the space between the double walls; the vacuum is relieved when the potting medium is sufficiently dry to permit air to permeate and to pass through the aperture and along the air path into the water chamber, thereby allowing an additional amount of water to flow.

ERRATUM

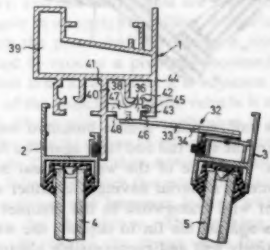
For Class 49—131 see:
Patent No. 3,775,912

3,775,905

CLOSURE ARRANGEMENT FOR A WINDOW OR DOOR OPENING EMPLOYING A SLIDABLE AND TILTABLE PANEL

Wilhelm Frank, Leinfelden, Germany, assignor to Wilh. Frank GmbH, Leinfelden, Germany

Filed Nov. 13, 1972, Ser. No. 306,008
Claims priority, application Germany, Nov. 12, 1971, P 21 56 175.1; Feb. 25, 1972, P 22 08 880.8
Int. Cl. E05d 15/52
U.S. Cl. 49—153 9 Claims



The opening in a window casing assembled from four lengths of extruded aluminium channel is provided with two

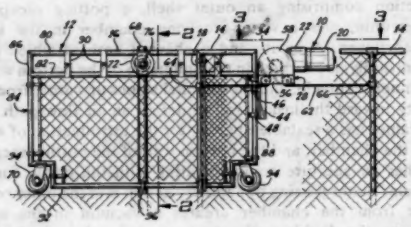
sliding sashes having frames of extruded aluminum. The lower horizontal frame member of one sash rides on wheels whose rim matches the semicylindrical top face of a guide rail on the lower horizontal casing member so that the sash may be pivoted about the axis of curvature of the guide rail face. Tilting of the sash is limited by brackets, each bracket including a slide guided along the upper casing member and a link pivotally connecting the slide to the top of the sash. When the sash is locked in the plane of the casing, sealing strips on the sash cooperate with sealing surfaces on the casing above the pivot axis while the engaged sealing strip is kept straight by abutting engagement of respective abutment faces on the lower casing member and the sash below the pivot axis.

3,775,906

SLIDING PORTAL AND OPERATING DEVICE THEREFORE

Earle T. Dougherty, 3420 N. 71st Ave., Phoenix, Ariz.

Filed Dec. 28, 1971, Ser. No. 213,000
Int. Cl. E05f 11/54, 15/14
U.S. Cl. 49—358 **11 Claims**



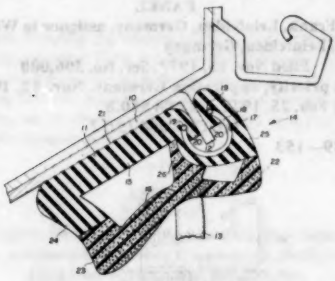
A sliding portal having an electrically actuated operating mechanism mounted thereon.

3,775,907

ROOF SIDE RAIL WEATHER SEAL

John L. Weaver, Rochester, and Edward H. Smoot, Holcomb, both of N.Y., assignors to The Schlegel Manufacturing Company, Rochester, N.Y.

Continuation of Ser. No. 84,735, Oct. 28, 1970, abandoned. This application July 31, 1972, Ser. No. 276,453
Int. Cl. E06b 7/22
U.S. Cl. 49—491 **4 Claims**



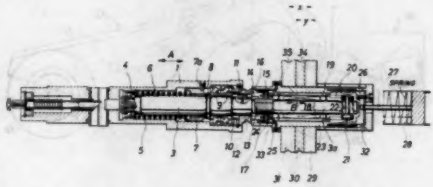
A roof side rail weather seal is mounted on a fin angled downward from the side rail and rests against a flat surface adjacent the fin. The base of the weather seal is formed of a dense, elastomeric material having a channel straddling the fin. A resilient wire framework in the channel squeezes the channel edges against the fin to support the weather seal in place. A relatively soft and compressible elastomeric sealing bridge integral with the base is formed of a cellular material engaging the top edge of a window glass approaching the flat surface to effect a seal between the glass and the rail.

3,775,908

MACHINE FOR GRINDING THE RIM OF A SPECTACLE LENS

Helmut Meckler, Dusseldorf, and Hans Gunter Barwasser, Norf, both of Germany, assignors to Wernicke & Co. KG, Dusseldorf, Germany

Filed Jan. 25, 1972, Ser. No. 220,618
Int. Cl. B24b 9/14
U.S. Cl. 51—72 R **9 Claims**



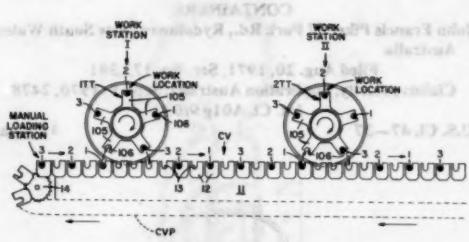
A machine for grinding the periphery of a spectacle lens, and the like, in which rough and fine grinding discs are mounted on a sleeve which is non-rotatably but axially moveably connected to a drive shaft. Abutment means on the sleeve and shaft determine one axial position of the sleeve relative to the shaft in which the rough grinding disc is effective while the sleeve is permitted to float axially of the shaft while the fine grinding disc is effective thereby to permit the disc to follow the contour of the periphery of the lens being ground.

3,775,909

SUCCESSIVE LENS POLISHING APPARATUS

Howard S. Best, Horseheads, N.Y., and Anthony A. Spycher, Wellsboro, Pa., assignors to Corning Glass Works, Corning, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,315
Int. Cl. B24b 7/24; B23q 7/14
U.S. Cl. 51—110 **13 Claims**



Apparatus for handling and conveying a plurality or succession of articles, such as workpiece holders or carrier blocks, from a loading station where the articles, workpiece holders or carrier blocks are manually loaded onto an intermittently moved conveyor and thence are moved from the loading station to and through a plurality of work stations and finally moved to a manual unloading station. The workpiece holders or carrier blocks may, for example, be so-called optical lens blank spot blocks each of which holds or supports a plurality of optical lens blanks which are workpieces that are to be ground to a desired shape and then polished. Under these conditions the plurality of work stations include in succession a rough grinding station, a fine grinding station, and first, second and third polishing stations. The intermittently moved conveyor extends past all of the stations and through an endless looped path of travel. The conveyor comprises a suc-

cession of evenly spaced-apart workpiece holder conveyor plates for conveying the workpiece carrier blocks or holders to and from the work stations. A rotatable workpiece holder support means or turntable is provided at each work station and, since it requires approximately three times as long to polish lens blanks as it does to rough grind or to fine grind the blanks, the workpiece holder support means or turntables at the grinding stations are intermittently moved through rotational or arcuate paths of motion or travel three times as often as the similar turntables at the polishing stations. Each of the succession of carrier blocks or workpiece holders are manually loaded in a recess in every other successive one of the conveyor plates of the conveyor and each workpiece holder or carrier block is transferred by such conveyor to and from the support means or turntables at the grinding stations for grinding operations of lens supported on the carrier blocks or workpiece holders. Every first, second and third carrier block or workpiece holder is transferred to and from the support means or turntables at the first, second and third polishing stations, respectively. The conveyor is intermittently moved through its looped path of travel in time relationships with the intermittent movement of the turntables or support means at the plurality of work stations. Automatic control means are provided for the grinding and polishing operations.

3,775,910

AUTOMATIC SIZING DEVICE FOR MEASURING APPARATUS

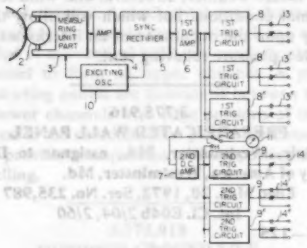
Kakuzo Kubo, Tokyo, Japan, assignor to Tokyo Seimitsu Co., Ltd., Tokyo, Japan

Filed June 17, 1971, Ser. No. 154,078

Claims priority, application Japan, June 19, 1970, 45/60284 (utility model)

Int. Cl. B24b *49/04*

U.S. Cl. 51—165.77 **4 Claims**



The automatic sizing device of the present invention provides two amplifiers for low sensitivity range and for high sensitivity range and these amplifiers are used in the following manner. That is, the amplifier for the low sensitivity range is used in normal grinding for detecting a grinding limit for which the grinding speed and the amount of grinding are measured and the whole range of procedure of the grinding to an on size can be observed. During the above-mentioned normal grinding, the grinding speed is changed to the speed for precise grinding. And when the amplifier for high sensitivity range is used in a finishing grinding, a high accuracy for grinding can be obtained, and the signals for a spark out and for an on size can be precisely generated.

3,775,911

DUAL SAFETY CONTROL FOR A POWER TOOL

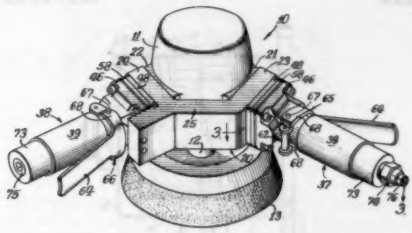
Andrew Flagge, Aurora, Ill., assignor to Thor Power Tool Company, Aurora, Ill.

Filed Jan. 24, 1972, Ser. No. 220,350

Int. Cl. B24b *23/02*

U.S. Cl. 51—170 T **8 Claims**

A safety control for a portable power tool such as a pneumatically driven hand grinder. A pair of throttles are secured to the tool housing for guiding and controlling the operation of the tool when the latter is in use. A valve is mounted in each throttle and both valves are normally biased to their closed positions by springs. An operating lever is pivotally mounted on each throttle for moving its associated valve to an open



position. The valves are arranged in series in a pair of connected passages which convey air under pressure from a remote source to the pneumatic drive motor of the tool. The tool is therefore rendered inoperative whenever one or the other or both of the throttle levers is intentionally or inadvertently released.

3,775,912

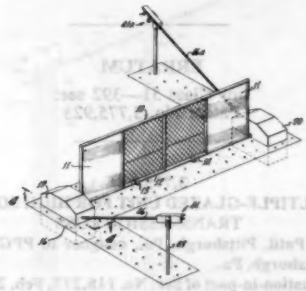
HORIZONTAL-AXIS VEHICLE GATE INCORPORATING LOCKING MECHANISM

John H. Walls, Los Banos, Calif., assignor to Stang Hydronics Inc., Orange, Calif.

Filed Mar. 10, 1972, Ser. No. 233,471

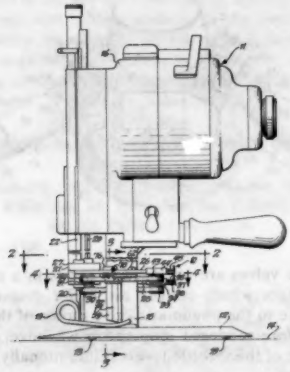
Int. Cl. E06b *11/02*

U.S. Cl. 49—131 **10 Claims**



A vehicle gate is mounted for pivotal movement about a horizontal axis which is generally coincident with the surface of the roadway, and counterweights are provided to normally maintain the gate in an upright position. A disc is nonrotatably associated with the pivot shaft for the gate, and has a notch therein adapted to receive a pivotally-mounted latch bar. A lock mechanism is so located that it is adjacent the passenger compartment of the vehicle when the vehicle is stopped on the approach side of the gate. Such mechanism is adapted to be operated by the vehicle driver to effect lifting of the latch bar out of the notch. The driver then drives the vehicle against and over the gate, following which the gate moves automatically to its upright condition and becomes locked without need for further action by the driver. The locking of the lock mechanism is effected by the driver while the vehicle is still near (but not at) the position at which it is located while the lock mechanism is being unlocked, but the gate does not actually lock until after the vehicle is driven therethrough.

3,775,913
KNIFE SHARPENING MECHANISM
Frederick G. Clark, Buffalo, N.Y., assignor to Eastman Machine Company, Buffalo, N.Y.
Filed Nov. 3, 1971, Ser. No. 195,122
Int. Cl. B24b 19/00
U.S. Cl. 51—246 4 Claims

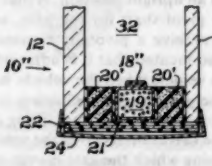


A knife sharpening mechanism for a cutting machine having an elongated knife comprising a grinder carriage having a pair of legs each mounting an endless abrasive belt, a drive for driving the belts, a belt guiding shoe on each of the legs with each shoe mounting belt guide elements including guide blocks for pressing each endless belt into engagement with the edge of the knife to thereby grind a bevel on the knife, each of the belt guide elements being bendable so as to adjust the angle which each of the guide blocks makes with the edge of the knife, the belt guide elements also being sufficiently rigid to hold the guide blocks in the position to which they were last adjusted.

ERRATUM

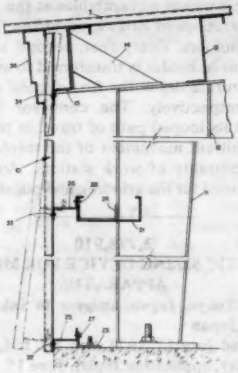
For Class 51—392 see:
Patent No. 3,775,923

3,775,914
MULTIPLE-GLAZED UNIT FOR HIGH SOUND TRANSMISSION LOSS
Pandit G. Patil, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 118,277, Feb. 24, 1971, abandoned. This application Apr. 18, 1972, Ser. No. 245,102
Int. Cl. E04c 2/34; E06b 3/66
U.S. Cl. 52—172 16 Claims



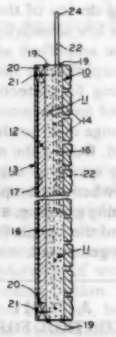
A multiple-glazed window unit comprising a plurality of glass sheets which are substantially parallel to each other and separated from each other at marginal portions thereof by a metallic spacing element and a plurality of resilient spacing elements. The resilient spacing elements are of substantial thickness and separate the metallic spacing element from said sheets. In one embodiment of the present invention, the resilient spacing elements are attached to each other by a thin web.

3,775,915
EXPLOSION VENTING WALL
Bruce B. Chambers, and Gary L. Radabaugh, both of Belpre, Ohio, assignors to Textron Inc., Providence, R.I.
Filed Nov. 3, 1972, Ser. No. 303,509
Int. Cl. E04h 9/02, 9/14
U.S. Cl. 52—1 2 Claims



In a pre-engineered metal building a wall having an opening closed off by a panel connected by a number of fasteners which will insure weather, structural and wind load integrity under normal conditions but which will allow the panel to swing away upon the occurance of an interior explosion and thus provide a pressure relieving vent.

3,775,916
PREFABRICATED WALL PANEL
Scott S. Bair, Westminster, Md., assignor to Development Company of America, Westminster, Md.
Filed Mar. 20, 1972, Ser. No. 235,987
Int. Cl. E04b 2/04, 2/60
U.S. Cl. 52—125 15 Claims



A multi-layer, wall panel is disclosed that is adapted by itself to form a complete structural wall of a building. In one form, the panel has a sandwich construction comprising an outer layer of masonry building units such as bricks, an internal, relatively lightweight, principally load-bearing layer of

cementitious material, and an insulating layer adapted to receive fasterners by which an inner decorative layer may be fixed to the panel construction. Preferably, frame members are mounted about the edges of one or more panels to unify the structure.

3,775,917

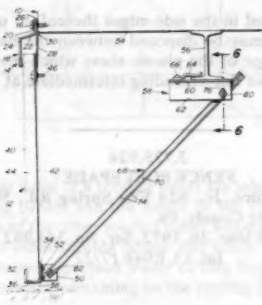
SUSPENDED SKIRTING FOR BELOW DWELLING,

Francis L. Struben, Whitehall, Md., assignor to Silver Top Manufacturing Company, Inc., Baltimore, Md.

Continuation of Ser. No. 58,276, July 27, 1970, abandoned. This application July 15, 1972, Ser. No. 269,055

Int. Cl. E04c *2/38*; **E04f** *19/04*

U.S. Cl. 52—169 **7 Claims**



A generally U-shaped channel is supported from the underside of a mobile home and is spaced directly beneath the vertical walls of the home and slightly above the ground level to provide a lower channel. A similarly shaped channel configuration is formed by preshaped sections which are attached to the lower edge of the vertical walls and spacially above the U-shaped channel to form an upper channel. A plurality of preformed skirting panels are positioned between the spaced upper and lower channels with edge portions of the skirting panels located in the channels. The panels are fastened to the channels to provide a suspended, self-supporting skirting for below a dwelling.

3,775,918

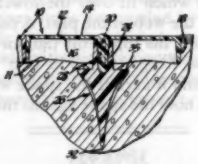
OUTDOOR GROUND TILE

Arthur J. Johnson, 31436 Artesian, Warren, Mich.

Filed Oct. 30, 1972, Ser. No. 302,009

Int. Cl. E01d *27/00*; **E04f** *13/08*

U.S. Cl. 52—169 **5 Claims**



An outdoor ground tile having a load bearing portion with depending ground support walls about the periphery thereof and intersecting ribs underneath which reinforce and also provide ground support to the load bearing portion. Anchor pins depend from the underneath side and the ribs and anchors which have a press fit with both the anchor pins and ribs provide for anchoring the tile to a ground surface.

3,775,919

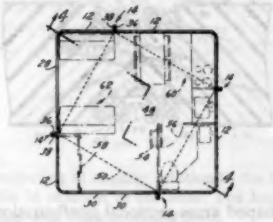
MODULAR STRUCTURES

James F. Fulton, Mamoroneck, N.Y., and Joseph A. Rinaldi, Oradell, N.J., assignors to Fulton & Partners, Inc., New York, N.Y.

Filed Apr. 13, 1972, Ser. No. 243,557

Int. Cl. E04h *1/02, 1/04*

U.S. Cl. 52—236 **4 Claims**



Single and multi-modular structures suitable for use as living quarters or as office space are fabricated from a plurality of pre-formed basic construction sections. The basic construction sections may be assembled to provide a single or basic modular unit and two or more basic modular units may be assembled in various configurations to provide multi-modular units.

3,775,920

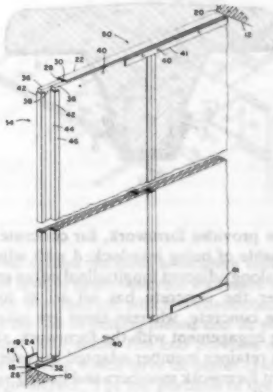
LAMINATED GYPSUM PARTITION

Joseph W. Schneller, Williamsville, N.Y., assignor to National Gypsum Company, Buffalo, N.Y.

Filed June 19, 1969, Ser. No. 834,752

Int. Cl. E04b *2/08*; **E04c** *2/14*

U.S. Cl. 52—241 **5 Claims**



A laminated panel including at least two gypsum boards, laminated in offset relationship, with light gauge sheet metal wrapped around both side edges of each board, and wall structures thereof.

3,775,921

INSULATED PANEL JOINT ASSEMBLY

William W. Avera, Winston-Salem, N.C., assignor to The Bahnson Company, Winston-Salem, N.C.

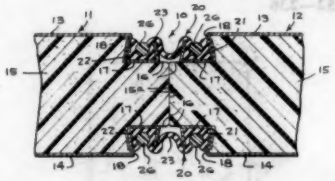
Filed June 2, 1972, Ser. No. 259,229

Int. Cl. E04d *1/36*; **E04b** *1/66*

U.S. Cl. 52—471 **11 Claims**

A panel joint assembly including a pair of laminated sandwich type panels each having an insulative core and a pair of

facing sheets, a pair of channel members nested in rabbets in adjacnt edges of the panels having outwardly opening constricted entrances, and an elastomeric joining strip having a pair of truncated wedge shaped marginal flange formations seated in said channel and an interconnecting, integral web



portion of U-shaped cross-sectional configuration extending therebetween. The flange formations have outwardly opening re-entrant recesses having an enlarged inner portion filled with an elastomeric locking cord of like cross-section to maintain the flange formations tightly seated in the channel members.

3,775,922

RETAINER AND ATTACHMENT MEANS

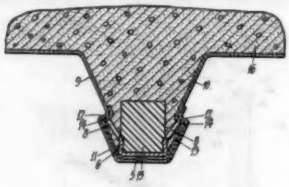
Reginald Lewis Myers, 8501 West Higgins Rd., Chicago, Ill.

Filed Dec. 16, 1970, Ser. No. 98,639

Claims priority, application Australia, Dec. 18, 1969, 65465/69

Int. Cl. E04c *2/32*; E04d *3/362*

U.S. Cl. 52—367 **4 Claims**



The invention provides formwork, for concrete structures, of the type capable of being interlocked with adjacent formwork members along adjacent longitudinal edges and to be left in position after the concrete has set so as to constitute cladding for the concrete, wherein there are retainer means for interlocking engagement with the formwork, said retainer means having a retainer member adapted to resist disengagement of adjacent formwork members and having void-forming means for providing a concrete void whereby a fastener may be engaged with the formwork without coming into engagement with the concrete.

3,775,923

FLEXIBLE TOOL HOLDER

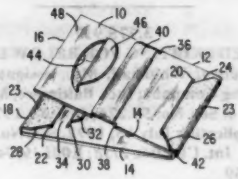
Robert W. Martin, 1057 Pennington Rd., Trenton, N.J.

Continuation-in-part of Ser. No. 205,999, Dec. 8, 1971, abandoned. This application Apr. 12, 1972, Ser. No. 243,179

Int. Cl. B24d *15/04*

U.S. Cl. 51—392 **16 Claims**

A flexible abrasive hand tool is herein described, comprising a generally planar sheet of a high density, flexible plastic material. The sheet may be formed with opposing end and side edges and transversely extending slots may be presented intermediate the edges for the engagement of a surface treating paper. A resilient band member may be disposed transversely entirely about the sheet of flexible plastic and may be held against movement relative to the plastic sheet by means of



notches presented in the side edges thereof. In one embodiment, the slots may be disposed between the band member and one end edge of the plastic sheet which may be folded along a transverse line extending intermediate at least two of the slots.

3,775,924

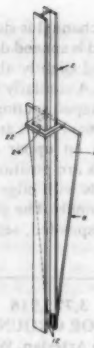
FENCE POST SPADE

Robert E. McClure, Jr., 824 Elm Spring Rd., Mt. Lebanon Twp., Allegheny County, Pa.

Filed Mar. 26, 1973, Ser. No. 344,982

Int. Cl. E04h *17/22*

U.S. Cl. 52—155 **10 Claims**



A spade for an H-beam fence post is made from a steel plate having a flat portion that engages the outside of one flange of the post. A pair of spaced apart tabs at the lower end of the plate extend upwardly from the flat portion so as to form two U-shaped members which fit over the lower end of the post one on each side of the web of the post. A pair of inwardly extending tabs at or near the top of the flat portion extends over the inside of the post flange toward its web. When the post is driven into the ground it carries the spade with it and the top tabs or other means hold the spade against the post.

3,775,925

ROOFING PANEL WITH DRAINAGE MEANS

Keiich Fujita, Kanagawa, Japan, assignor to Fujita Kenzo Kogyo Co., Ltd., Kawasaki City, Kanagawa, Japan

Filed Dec. 2, 1971, Ser. No. 203,984

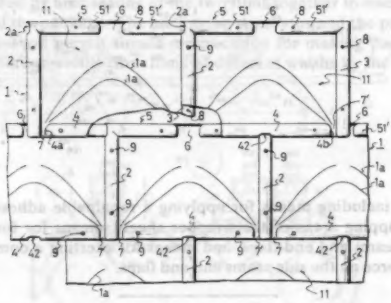
Claims priority, application Japan, Dec. 2, 1970, 45/120019; Feb. 2, 1971, 46/4646; Feb. 22, 1971, 46/10384

Int. Cl. E04d *1/28*

U.S. Cl. 52—534 **13 Claims**

A roofing panel which is provided with long curvations formed respectively along both the right and left sides and

both the front and rear sides of the roofing panel, whereby the front side corrugation of the roofing panel is overlapped on the rear corrugations of two other roofing panels which are arranged in parallel at the front side of the roofing panel when the roofing panel is coupled to other roofing panels so that the



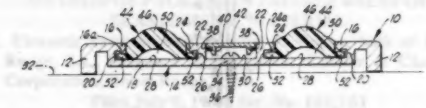
front and rear sides of a roofing panel are joined with those of other roofing panels and the either of the right-and-left-side corrugations of the other roofing panel when the roofing panel is coupled to other roofing panels and which is provided with the water drains to prevent water or rain from intruding into joined portions and remaining on the roofing panels.

3,775,926

SHOCK ABSORBING CHAIR RAIL ASSEMBLY

Russell L. Brown, 1620 Kingsbury Ln., and Lemuel G. Brown, both of Oklahoma City, Okla., assignors to said Russell L. Brown, by said Lemuel G. Brown

Filed Sept. 10, 1971, Ser. No. 179,277
Int. Cl. E04f *19/02*
U.S. Cl. 52—717 **7 Claims**



A chair rail assembly which includes an elongated rigid supporting member having formed on one side thereof, a pair of bumper strip receiving channels. A pair of elongated flexible and resilient bumper strips are carried by said channels. The chair rail assembly may further include terminal caps secured to the opposite ends of the rigid supporting member and a plurality of fastener elements utilized for securing the assembly to a supporting surface which it is to protect.

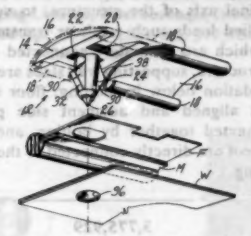
3,775,927

SELF-RETAINING FASTENER

Engelbert A. Meyer, Union Lake, Mich., assignor to Warren Fastener Corporation, Mt. Clemens, Mich.

Filed May 26, 1972, Ser. No. 257,416
Int. Cl. E04f *19/02*
U.S. Cl. 52—718 **7 Claims**

A plastic one-piece fastener having a base, a body symmetrically tapering in one plane normal thereto, and a pointed end portion is transversely receivable in a decorative molding or other article to be mounted. A pair of lateral resilient retainer wings of the body is deflectible together on entering an aperture of a mounting member, the wing portions having locking



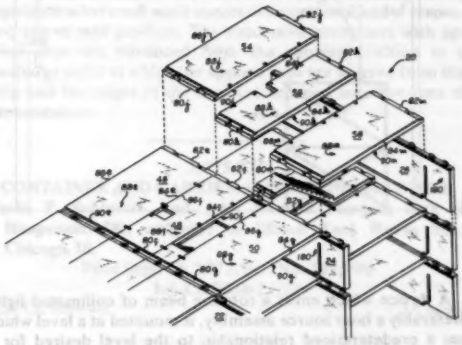
shoulders projecting in angular relation to the base for retaining the article in relation to the base. The locking shoulders may be formed with work retaining teeth.

3,775,928

ERECTION METHOD FOR STRUCTURAL SYSTEM

William F. Dawson, and Milo Shemie, both of Montreal, Quebec, Canada, assignors to Descon Concordia Systems, Ltd. c/o Sage, Gray, Todd & Sims, New York, N.Y.

Filed Mar. 9, 1972, Ser. No. 233,043
Int. Cl. E04b *1/35*
U.S. Cl. 52—741 **9 Claims**



A structural system includes a building unit comprising at least a pair of spaced apart concrete wall slabs which support a concrete floor slab thereon which is connected directly to the wall slabs by the use of bolting means and tie plates embedded in the wall and floor slabs. The end portions of the floor slab have recesses therein which have tie plates extending across at least a portion thereof. The top portions of the wall slabs have tie plates protruding therefrom. The wall and floor slab tie plates have apertures therein which are aligned to form through holes, the bolting means being connected through these through holes to form a self-supporting building unit. Adjacent building units in the structure share a common wall slab and the adjacent end portions of adjacent floor slabs associated therewith are directly connected to each other and to the common wall slab by aligning the apertures in the associated tie plates to form through holes, bolting means being connected therethrough. A plurality of floor slabs may be supported between a pair of common wall slabs with the end portions of the floor slabs connected thereto as above. Adjacent side portions of adjacent floor slabs have recesses therein which are in communication and which have flat plates having apertures therein extending thereacross. These adjacent side portions are connected to each other by connector plates hav-

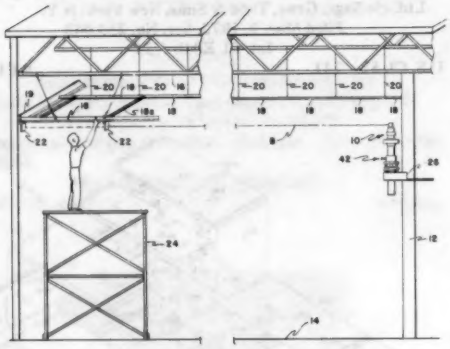
ing apertures therein which are aligned with the apertures in the flat plates to form through holes, a bolting means being connected therethrough. Concrete wall slabs normal to the floor supporting wall slabs may also be provided, such as along the longitudinal axis of the structure, to vertically transfer laterally applied loads such as shear transmitted across the floor slabs which are ultimately connected thereto. In constructing a structure, supporting wall slabs are anchored to the wall or foundation below by bolting, floor slabs are placed thereon and aligned and adjacent side portions thereof directly connected together by bolting, and thereafter end portions thereof are directly connected to the supporting wall slabs by bolting.

3,775,929

METHOD FOR INSTALLING CEILINGS

Roger J. Roodvoets, Grand Rapids, and Edward G. Nielsen, Wyoming, both of Mich., assignors to Laser Alignment, Inc., Grand Rapids, Mich.

Filed June 11, 1971, Ser. No. 152,298
Int. Cl. E04g *21/00, 21/10*
U.S. Cl. 52—747 **11 Claims**



A device which emits a rotating beam of collimated light, preferably a laser source assembly, is mounted at a level which has a predetermined relationship to the level desired for a suspended ceiling. A target is placed on a ceiling panel supporting member and the member is elevated until the target is intercepted by the light beam at a predetermined line on the target. At this point, the ceiling supporting member is fixed in place. When it is desirable to bend the supporting wires before the ceiling supporting members are installed, the target may be moved along adjacent the wire and the wire bent at a given distance from the point where the light beam intercepts the target.

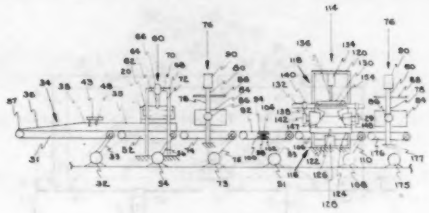
3,775,930

PAPER PULP BALING METHOD AND APPARATUS

Cecil S. Mercer, North Vancouver, British Columbia; Archibald D. Beveridge, West Vancouver, British Columbia, and Frederick A. McDowall, Richmond, British Columbia, all of Canada, assignors to Swift & Company, Chicago, Ill.

Continuation of Ser. No. 153,669, June 16, 1971, which is a continuation-in-part of Ser. No. 50,837, June 29, 1970. This application Feb. 5, 1973, Ser. No. 329,880
Int. Cl. B65b *11/02, 11/08*
U.S. Cl. 53—32 **12 Claims**

Method of baling bundles of paper pulp comprising overwrapping the bundle with top and bottom wrapper sheets, and thereafter forming side seams and end flaps about the bale by applying a repulpable adhesive to overlapping areas of the wrapper sheets and exerting a compressive force on these adhesive-carrying areas so as to obtain bonded side seams and end flaps. Apparatus is disclosed for baling bundles of paper



pulp, including means for applying a repulpable adhesive to overlapping areas of the wrapper sheets, means for forming side seams and end flaps, and means for exerting a compressive force on the side seams and end flaps.

3,775,931

METHOD AND APPARATUS FOR PACKAGING POULTRY UTILIZING CONTROLLABLY ACTUATED POSITIVE PRESSURE LIFTING MEANS

Kenneth A. Kraft, Milwaukee, Wis., assignor to John Mohr & Sons, Chicago, Ill.

Filed Feb. 10, 1972, Ser. No. 225,183
Int. Cl. B65b *31/06*
U.S. Cl. 53—22 B **9 Claims**

A bagged poultry vacuumizing and lifting machine in which lifting of the bagged poultry occurs by application of greater than atmospheric fluid pressure to the lifting mechanism, said lifting action being entirely independent of the vacuumizing action. A unique quick connect and disconnect system consisting of a minimum of parts is also disclosed.

3,775,932

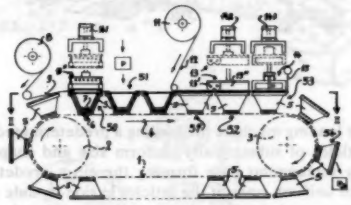
PACKAGING APPARATUS AND METHOD

Peter Jeney, Zug, Switzerland, assignor to Tourpac AG, Zug, Switzerland

Filed Mar. 1, 1972, Ser. No. 230,919
Claims priority, application Switzerland, Mar. 18, 1971, 4017/71
Int. Cl. B65b *31/02*
U.S. Cl. 53—22 A **13 Claims**

Packaging apparatus and a method of packaging wherein a series of pocket members travel along an endless path through

a plurality of stations with a packaging film held at a first station and formed under pressure into a pocket, at a subsequent station a product is placed into the film pocket, at a further station a second film is superimposed over the first packaging film and the two films are heat sealed together to form a plurality of sides of a package, and at a final station the partially-sealed package is enclosed within an airtight chamber with a vacuum drawn in the package through the open side thereof followed by heat sealing of the two films together to completely seal the package. The packaging apparatus and the packaging method permit simple modification for making packages of different widths from films of different widths by the use of



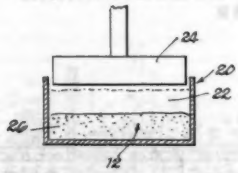
insert members filling a part of the cavities in the pocket members to reduce the over-all size of the cavities and with hold-down structure at the pocket-forming station and heat seal structure at the initial sealing station adjustable to coact with the films of different widths to insure hold-down and sealing of the films. The structure of the final sealing station need not be modified since the airtight chamber may have a dimension equal to the largest package to be made and the vacuum drawing and final sealing always operates through the open side of the package which is along a fixed predetermined line which is the same regardless of the width of the packaging films and the resulting package.

3,775,933

METHOD OF PACKAGING FRIABLE BALES OF ELASTOMERIC MATERIAL

E. Elsworth Prescott, and Edward F. Copus, both of Baton Rouge, La., assignors to Copolymer Rubber & Chemical Corporation, Baton Rouge, La.

Filed July 9, 1971, Ser. No. 161,161
Int. Cl. B65b *63/02*
U.S. Cl. 53—24 **3 Claims**



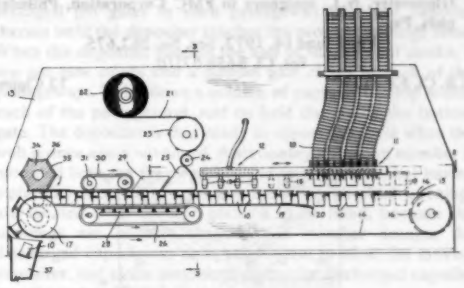
Friable bales of elastomeric crumb formed of porous crumb having a bulk density within the range of 16 to 30 pounds per cubic foot and compressed into bales having a bulk density within the range of 24 to 45 pounds per cubic foot and packaged in separated load-free compartments for storage or shipment without loss of friability.

3,775,934

METHOD OF AND APPARATUS FOR APPLYING CAPS TO CONTAINERS

Lewis W. Smith, Peterborough, Ontario, Canada, assignor to Purity Packaging Limited, Peterborough, Ontario, Canada

Filed Apr. 6, 1972, Ser. No. 241,734
Int. Cl. B65b *7/28*
U.S. Cl. 53—38 **10 Claims**



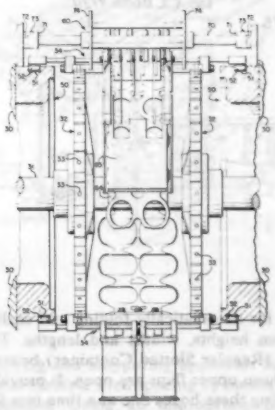
In the application of caps in interconnected strip form to cup-like containers, the containers and the caps are fed along respective feedpaths to a position at which the caps are applied to the containers in succession, the spacing of the caps being slightly greater (by about 0.3 percent) than the spacing of the containers, and the rate of feed being such as to ensure registration between each successive container and a respective cap at said position. The successive containers with applied caps are advanced from the capping position to a discharge point at which the applied caps are severed from the strip and the edges of the caps are crimped onto the rims of the containers.

3,775,935

CONTAINER AND CARRIER ASSEMBLING MACHINE

David F. Schlueter, and John Edward Morgan, both of Hoopeston, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 289,908
Int. Cl. B65b *21/24*
U.S. Cl. 53—48 **3 Claims**



Improvements in container and carrier assembling machines wherein the carriers are a series of flat plastic carriers with longitudinally extending transversely arranged pairs

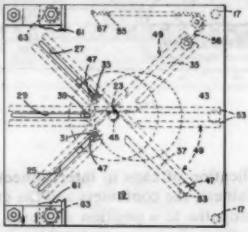
of apertures. The machine is a rotary machine which takes the carriers in succession, folds the longitudinally central and side edges, stretches the apertures over the containers delivered to the machine, and releases the carriers to embracingly engage the containers.

3,775,936

APPARATUS FOR CENTERING CIRCULAR ARTICLES

Carl R. Pepmeier, Fredericksburg, Va., and Edward G. Lowe, Gloucester, N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed June 14, 1972, Ser. No. 262,675
Int. Cl. B65b *67/10*
U.S. Cl. 53—137 **12 Claims**



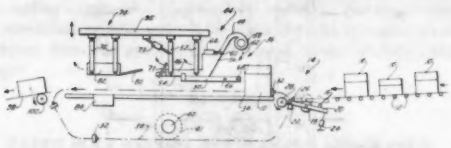
Apparatus for automatically centering circular articles which differ in diameter, as for example, a wrapping apparatus in which annular articles of varying circular dimensions are centered with respect to a sealing means. The invention described herein is applicable for use in a method of providing annular articles with a snug and substantially air-tight outer covering.

3,775,937

AUTOMATIC RANDOM SIZE BOX SEALER

Frank Devan, South Nyack, and Fred Devan, Palisades, both of N.J., assignors to Devon Tape Corporation, Carlstadt, N.J.

Filed May 10, 1972, Ser. No. 252,035
Int. Cl. B65b *7/20*
U.S. Cl. 53—75 **16 Claims**



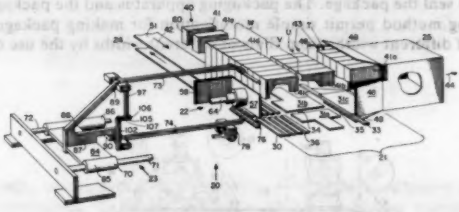
A machine for automatically folding and sealing boxes of various random heights, widths and lengths. The machine receives RSC (Regular Slotted Container) boxes of random dimensions whose upper flaps are open. It provides for automatically feeding these boxes one at a time into the machine, adjusting to the dimensions of the box, closing the inner and outer flaps, squaring the boxes, holding the upper flaps together and sealing the boxes and then transporting the sealed box out of the machine.

3,775,938

CASE LOADING MACHINE

Richard A. Sutphin, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 13, 1972, Ser. No. 234,230
Int. Cl. B65b *5/06, 35/40*
U.S. Cl. 53—164 **10 Claims**



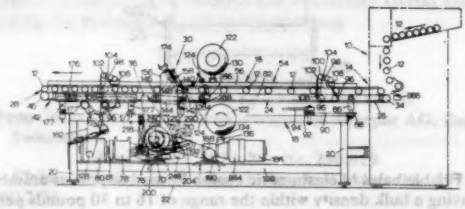
A case loading machine for loading a predetermined plurality of articles of substantially uniform size and shape into a generally rectangular case forming therein a predetermined pattern of uniform rows of the articles in side-by-side relation. Means are provided for receiving a file of articles along a first path of travel upon a platform and forming on a predetermined area thereof successive uniform rows of articles. Pushing means are provided to laterally move a row on the platform from the area where formed to fill a case indexed with the platform in a case loading position. The pushing means comprises an articulated reciprocating pusher including means for permitting infeed onto the predetermined area of the platform to form another row as soon as it has wholly removed the preceding row therefrom. The pushing means may also include a short stroke pusher which is independently operable from the articulated reciprocating pusher, the two pushers being configured and disposed for laterally forwarding rows along the same path. When used in combination, the two pushers are also configured to permit some degree of simultaneous operation. The two pushers can be operated so that operation of the short stroke pusher results in the formation of a column of a predetermined number of rows in side-by-side relation, and operation of the articulated reciprocating pusher forwards the column a predetermined distance to move an array of rows as a unit into a case. Productivity of the case loading machine is enhanced by permitting infeed during a portion of each cycle of the articulated reciprocating pusher, and by operating the two pushers simultaneously.

3,775,939

ROLL BANDING MACHINE

Bertram F. Elsner, and Frank Elsner, Jr., both of Hanover, Pa., assignors to Elsner Engineering Works, Inc., Hanover, Pa.

Filed Jan. 7, 1972, Ser. No. 216,012
Int. Cl. B65b *27/06, 13/02*
U.S. Cl. 53—198 R **28 Claims**



A machine to apply bands of heat-shrinkable, fusible material around coiled rolls of sheet material by feeding said

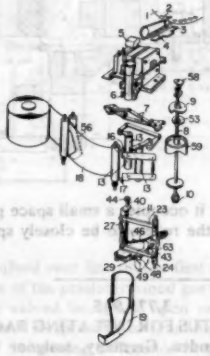
rolls intermittently along a path to provide stationary intervals during which one of a pair of clamping and sealing jaws moves between successive rolls to form at least one band of material around said rolls successively. Additional conveyor means move said banded rolls along heating means, while rotated continuously, to effect shrinking of said bands closely around said rolls.

3,775,940

COIN-GUIDING DEVICE IN COIN WRAPPER

Yoshihiro Hatanaka, Himeji-shi, Japan, assignor to Glory Kogyo Kabushiki Kaisha, Hyogo-ken, Japan

Filed June 15, 1972, Ser. No. 263,288
Claims priority, application Japan, June 18, 1971, 46/53037
Int. Cl. B65b *11/04*
U.S. Cl. 53—212 **3 Claims**



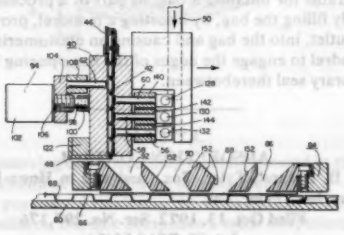
In a coin wrapper, a guide member receives and supports a stack of coins and guides the same into position between wrapping rolls to be rotated thereby as a wrapping paper strip is wound around the stack, and projecting upper and lower lateral edges of the paper are folded in over the ends of the stack, the guide member being actuated in horizontal and vertical movements by actuating means and being adjustably positioned in elevational height by positioning means in a manner such the projecting upper and lower lateral edges of the paper are substantially of equal width.

3,775,941

ARTICLE PACKAGING MACHINE

Charles Frederick Bross, Chicago, Ill., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Feb. 10, 1972, Ser. No. 225,084
Int. Cl. B65b *5/10, 39/00*
U.S. Cl. 53—246 **10 Claims**



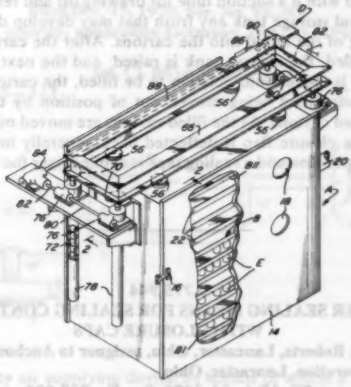
The present article packaging machine is particularly suitable for use in depositing capsules into rows of pockets formed in a web. As the web pockets are formed by separate apparatus, th web is periodically advanced a predetermined distance. The packaging machine includes a depositer which oscillates over the web pockets, the depositer moving forward with the advancing web. Shortly after the web movement stops, the depositer reaches the end of its forward stroke where the first capsules are discharged. Remaining capsules are sequentially discharged during the return stroke, the capsules being arranged in columns in vertically arranged passageways formed in the depositer. A plurality of vertically arranged pin gates in each passageway hold the capsules therein until the depositer reaches the proper discharge zone. When the depositer reaches the end of its rearward stroke, a top pin gate opens and a bottom gate closes in each of the passageways. This allows a column of capsules to drop within each of the passageways, and be held therein by the bottom gate. The depositer is thus ready to repeat the cycle when the web is once again advanced. A stationary transition member is mounted between the depositer and web, this member having a plurality of openings extending therethrough which openings are located over the web pockets to be filled; because the openings are suitably shaped, this member accepts the discharged capsules so as to allow them to clear the moving depositer, and at the same time guides the discharged capsules into the web pockets.

3,775,942

VACUUM STOPPERING APPARATUS WITH PEGBOARD SHELF ADJUSTMENT

Harold R. Powell, King of Prussia; Cornelius C. Dunn, Havertown, and John R. Burke, Philadelphia, all of Pa., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed June 8, 1972, Ser. No. 260,791
Int. Cl. B67b *1/04*; B65b *31/02*
U.S. Cl. 53—264 **2 Claims**



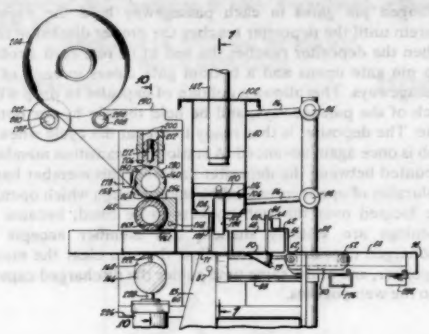
Vacuum drying and stoppering apparatus having multiple shelves permits variable shelf spacing by means of a pegboard type arrangement. Using an appropriate pattern of the pegholes, one or more shelves may be immobilized by seating them in the lowermost shelf and then redistributing the remaining shelves according to a predetermined coded hole sequence.

3,775,943

APPARATUS FOR FILLING AND SEALING CARTONS FOR HOLDING LIQUIDS

Charles Wright Jones, Los Angeles, Calif., assignor to Xepex Industries, Inc., Beverly Hills, Calif.

Filed Apr. 29, 1971, Ser. No. 138,623
Int. Cl. B65b *3/06*
U.S. Cl. 53—282 6 Claims



The apparatus disclosed herein is arranged to fill with liquid and seal a carton which has as its single means of access an orifice closable by a simple, flat flap punched from one side of the carton but remaining integral with that side. The cartons are delivered one by one and accumulated on a platform of the carton filling and sealing apparatus. After a predetermined number of cartons have been accumulated, they are moved into position beneath a storage tank for the liquid with which they are to be filled. The tank is lowered to bring spout-like appendages on the tank into penetrative relation to the orifices of the cartons. After the cartons have been so positioned, valve mechanism associated with the tank meters a quantity of liquid into the cartons. Each of the spout-like members has associated with it a suction tube for drawing off and returning to the liquid storage tank any froth that may develop during the pouring of the liquid into the cartons. After the cartons have been filled, the storage tank is raised, and the next group of cartons is moved into position to be filled, the cartons which have been filled being moved out of position by the newly presented cartons. As the filled cartons are moved out of position, the closure flap is deflected back generally into carton closing position and a sealing tape is applied over the flap.

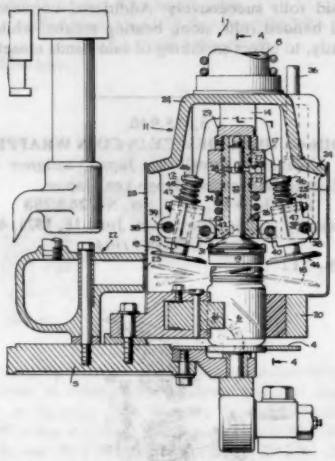
3,775,944

ROLLER SEALING MEANS FOR SEALING CONTAINERS WITH CLOSURE CAPS

Cecil P. Roberts, Lancaster, Ohio, assignor to Anchor Hocking Corporation, Lancaster, Ohio

Filed Feb. 24, 1972, Ser. No. 228,922
Int. Cl. B67b *3/18*
U.S. Cl. 53—334 6 Claims

An improved sealing head is described for use on machines which seal containers by placing a metal closure cap over the container mouth and by then rolling portions of the cap skirt into engagement with the container rim. The improved sealing head utilizes a pair of rollers which are movably mounted on the sealing head so that downward movement of the head automatically swings the two rollers into operating position against the cap skirt forcing the skirt into engagement with the container. This improved roller mounting means is particularly useful with high speed multi-head sealing machines as the roller structure and its operating means is relatively simple and compact so that it occupies a small space permitting the sealing heads using the rollers to be closely spaced to each other.

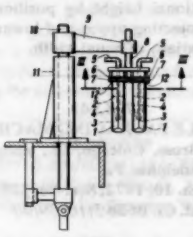


3,775,945

APPARATUS FOR INFLATING BAGS

Paul Kuhnle, Winnenden, Germany, assignor to Fr. Hesser Maschinenfabrik, Stuttgart, Germany

Filed Dec. 13, 1971, Ser. No. 207,436
Claims priority, application Germany, Dec. 16, 1970, G 70 46 342.2
Int. Cl. B65b *43/36*
U.S. Cl. 53—385 7 Claims



Apparatus for inflating a bag, as part of a process for automatically filling the bag, by inserting a mandrel, provided with an air outlet, into the bag and causing an elastomeric collar on the mandrel to engage the edges of the bag opening to provide a temporary seal therebetween.

3,775,946

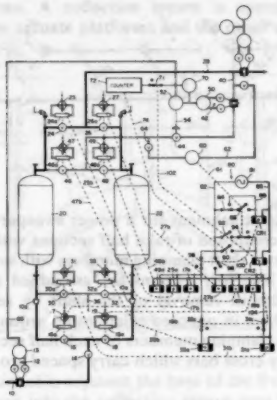
ADSORPTION CONTROL

Ronald D. Brazzel, Tyler, Tex., assignor to Howe-Baker Engineers, Inc., Tyler, Tex.

Filed Oct. 13, 1972, Ser. No. 297,176
Int. Cl. B01d *53/04*
U.S. Cl. 55—58 11 Claims

A gas stream is purified in a two adsorber system, each adsorber having valved input and output flow lines, a valved

counterflow line and a valved vent line. Simultaneously actuated in a first sense are the valved input and output flow lines on the first adsorber and the valved counterflow and vent lines on the second adsorber. Simultaneously actuated in a second sense opposite the first sense are the valved input and output flow lines on the second adsorber and the valved counterflow



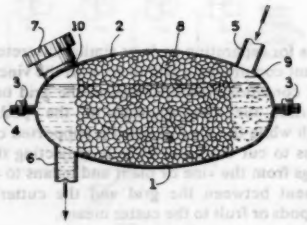
line and the valved vent line on the first adsorber. Responsive to counterflow of the predetermined gas volume after each actuation of the valved lines, any open valved vent line in the system is closed. Responsive to reaching a near minimum in each cycle of decreasing difference in pressure between the two adsorbers the simultaneous actuation of the valved lines is initiated.

3,775,947

GAS-REMOVING BOX FOR A LIQUID CIRCUIT

Michel Dupont, Mareil-Marly; Henri Lacroix, Neuilly, and Jacques Lagarde, Montbeliard, all of France, assignors to Automobiles Peugeot, Paris and Regie National des Usines Renault, Billancourt, both of France

Filed Oct. 18, 1971, Ser. No. 190,003
Claims priority, application France, Oct. 30, 1970, 7039190
Int. Cl. B01d *19/00*
U.S. Cl. 55—159 **10 Claims**



A gas-removing box which may be incorporated in the cooling liquid circuit of an internal combustion engine.

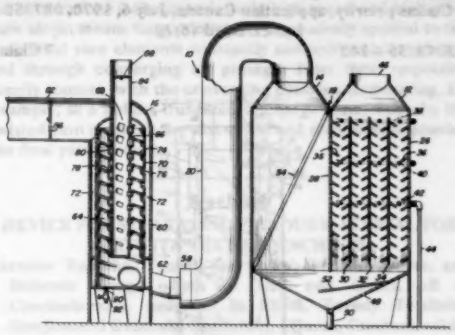
For the purpose of rendering the rates of flow of the liquid streams uniform, the box comprises a mass of synthetic foam or like material having open cells whereby it is possible to achieve an excellent separation of the gas or steam bubbles from the liquid notwithstanding the particularly low price of the box.

3,775,948

DEVICE FOR CLEANING EXHAUST PRODUCTS

Jimmie V. Beam, 1201 58th Ter., Fort Smith, Ark.

Filed Jan. 18, 1972, Ser. No. 218,692
Int. Cl. B01d *47/06*
U.S. Cl. 55—238 **16 Claims**



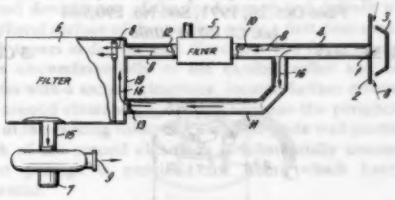
Apparatus for thoroughly cleaning the exhaust products of industrial processes includes a baffled, multi-level spray chamber, a heat exchanger and a spirally baffled, multi-compartmented separator. A gaseous exhaust medium, containing entrapped particles as well as condensible vapors, is wetted as it flows downwardly through the spray chamber and deposits moisture entrained contaminant particles on the baffles. The gas is then reduced in temperature, if above its vaporization point, in the heat exchanger with attendant condensation of vapors and further particle deposition. Finally, the gas is vectored upwardly in a spiralling counter-clockwise flow within the separator whereby its heavier constituents are collected in the outer compartments of the separator and its lighter constituents in the inner compartments thereof.

3,775,949

SAFETY AIR SUPPLY DEVICE

Karl-August Wachter, Lubeck, Germany, assignor to Drager-werk AG, Lubeck, Germany

Filed Dec. 15, 1970, Ser. No. 98,389
Claims priority, application Germany, Dec. 23, 1969, P 19 64 898.7
Int. Cl. B01d *50/00*
U.S. Cl. 55—312 **2 Claims**



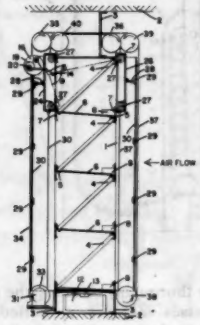
A safety air supplying device by means of which a room is supplied with air which is purified from poisonous substances includes an inlet connected to a coarse dust filter which, in turn, is connected to a suspended-matter filter, or gas filter and to an intake fan which discharges into the room. A by-pass line extends from the inlet to the coarse dust filter and to a line which connects into the outlet of the coarse dust filter at the location where it connects into the gas filter. This line is provided with a rapid closure valve. In those cases, in which the quantity of air which must be delivered must be considerably increased rapidly, this quick closure valve is opened, and, at the same time, the speed of the delivery of the fan can be increased.

3,775,950

PROCESS AIR AUTOMATIC SELF-CLEANING AIR FILTRATION SYSTEM

Alfred S. Hallamore, c/o 230 Arvin Ave., P.O. Box 190, Stoney Creek, Ont., Canada

Filed Apr. 27, 1971, Ser. No. 137,784
Claims priority, application Canada, July 6, 1970, 087350
Int. Cl. B01d 46/12
U.S. Cl. 55—242 7 Claims



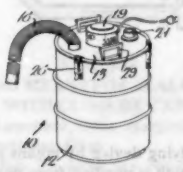
In a gas filtration system comprising a frame having an upstream side and a downstream side and adapted to support a bank of mechanical filters transversely in a gas stream to remove particulate solids therefrom and means for washing said particulate solids from said filters, the improvement in which said washing means includes isolator means adapted to isolate a portion of said filter bank from passage of gas therethrough and spray means arranged to spray washing liquid on the downstream side of said isolated portion of said filter bank, means being provided for moving said washing means over said bank of filters and means being provided for collecting the washing liquid from the upstream side of the isolated portion of the filter bank and discharging the liquid from the system without said liquid contacting the portions of the bank through which the gas may pass whereby the filter bank may be cleaned during operation of said system.

3,775,951

VACUUM CLEANER

Arthur H. Eicholz, and James E. McCambridge, both of Polo, Ill., assignors to Central Quality Industries, Inc., Polo, Ill.

Filed Oct. 20, 1971, Ser. No. 190,984
Int. Cl. B01d 50/00
U.S. Cl. 55—417 3 Claims



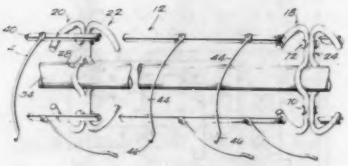
A heavy duty vacuum cleaner of the upright tank type having a cover with a motor impeller combination mounted therein that draws air from the container through a filter cartridge. A ball valve is freely received in the filter cartridge and closes under the buoyant force of water in the tank when filled to terminate the suction effect of the impeller at that time. Also provided is a straight intake tube mounted vertically in the cover that extends within the tank to a position below the filter so that it directs incoming materials or foreign matter to the bottom of the container and not directly to the filter.

3,775,952

RAKE ATTACHMENT FOR POWER SWEEPER

Francesco Aluppa, W.207 S8286 Hillandale Dr., Muskego, Wis.

Filed Sept. 5, 1972, Ser. No. 285,977
Int. Cl. A01d 51/00
U.S. Cl. 56—16.4 6 Claims



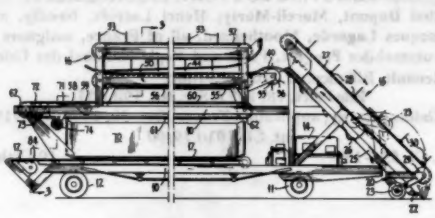
A power rake attachment for a power sweeper includes a rake assembly composed of rake half sections with each half section having two shaft clamping members with semi-circular loop portions. The half sections are assembled around the power shaft without removal of the shaft by securing the clamping members in opposed relationship around the shaft with bolts. The clamping members of each half section are interconnected by cross bars which carry spaced ground engaging tines.

3,775,953

MACHINE TO SEPARATE PODS OF SIMILAR DISCRETE FRUIT FROM ITS ASSOCIATE VINE OR PLANT

Tjeerd J. Poutsma, 11 Nobility St., Via Geelong, Moolap, Victoria, Australia

Continuation-in-part of Ser. No. 20,889, March 19, 1970, abandoned. This application Dec. 21, 1971, Ser. No. 210,501
Claims priority, application Australia, Mar. 21, 1969, 52299/69; May 25, 1971, 4983/71
Int. Cl. A01d 45/22, 45/24
U.S. Cl. 56—126 18 Claims



Apparatus for separating pods or similar discrete fruit from a vine or plant comprising a grid to support the vine or plant in a distended condition, the openings in the grid being of the size to permit the free passage of the pods or fruit therethrough while the vine or plant is supported on the grid, cutter means to cut the pods or fruit projecting through the grid openings from the vine or plant and means to effect relative movement between the grid and the cutter means to present the pods or fruit to the cutter means.

3,775,954

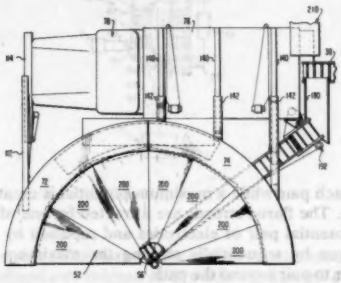
METHOD AND APPARATUS FOR FACILITATING THE HARVESTING OF FRUIT FROM FRUIT TREES

Quentin H. Van Schoyck, Christmas, Fla., assignor to Cylpik Incorporated, Winter Park, Fla.

Filed Jan. 4, 1973, Ser. No. 321,013
Int. Cl. A01g 19/06
U.S. Cl. 56—329 24 Claims

An apparatus for facilitating the harvesting of fruit from fruit trees including support means operably positionable ad-

jacent to a fruit tree. The apparatus comprises support means including a first arcuate platform and a second arcuate platform which may be operably combined to form a generally semicircular platform for at least partially surrounding the periphery of a fruit tree. A conveyor is connected at one end thereof to the support means and is operably positionable at the other end thereof adjacent to the base of the fruit tree at a horizontal elevation less than that of the first and second arcuate platforms. A collection means is operably extendible between the arcuate platforms and the other end of the conveyor positionable adjacent the base of the fruit tree whereby fruit dropped into the collection means may be funneled by gravity into the other end of the conveyor for delivery away from the fruit tree.



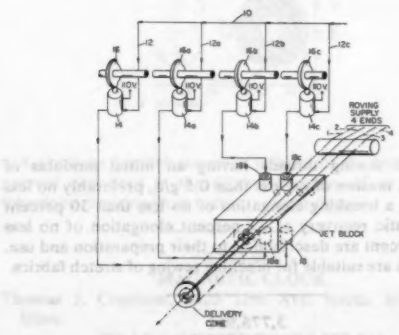
A method for facilitating the harvesting of fruit from fruit trees comprising the steps of positioning a support adjacent to a fruit tree, extending a conveyor from the support to the base of the fruit tree and deploying collection means between the inner periphery of the support and the end of the conveyor adjacent the fruit tree.

3,775,955

COMPOSITE FALSE-TWIST YARNS, METHODS AND APPARATUS

Jashwant J. Shah, Springfield, Mass., assignor to Bigelow-Sanford, Inc., Thompsonville, Conn.

Filed July 30, 1971, Ser. No. 167,641
Int. Cl. D01h *1/00, 7/92*
U.S. Cl. 57—34 AT **3 Claims**



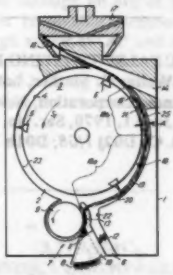
Composite false-twist yarns, method and apparatus, wherein continuous strand elements from their respective supply sources, for example, rovings, (at least three) and preferably four or more ends thereof while directly fed from their supply sources are air-jet spun and twisted simultaneously, whereby stable composite twisted yarns, with or without pairing and cabling, may be produced as end products, suitable, for example, for carpet and upholstery fabrics, the final yarn products being characterized by stabilized false twist zones, such stabilization being provided by interspersed or intermediate zones of opposite twist and, preferably, in addition, with intermingling (or interlacing) parts of (or whole) yarn elements including regular or irregular repeated interlacing of interchanged yarn elements to provide successively different pairing of said elements between (at least three) yarn elements, and preferably between pairs thereof; the apparatus for such operations including relatively high speed and high pressure air-jet means tangentially and successively applied to the individual yarn elements constantly and uniformly separately fed through converging air passages from their respective supply sources, with the converging passages terminating, for example, at a hollow truncated discharge cone, whereby the twisted yarn elements are assembled and combined to provide the final yarn products.

3,775,956

DEVICE FOR SEPARATING FIBROUS MATERIAL FOR USE WITH TEXTILE MACHINES

Jaroslav Rajnoha, Tyniste nad Orlici; Ladislav Bures, and Bohumir Burget, both of Usti nad Orlici, all of Czechoslovakia, assignors to Elitex, Zavody Textilniho Strojirenstvi Generalni Reditelstvi, Liberec, Czechoslovakia

Filed Dec. 20, 1971, Ser. No. 209,705
Claims priority, application Czechoslovakia, Dec. 23, 1970, 8731/70
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.91 **5 Claims**



A device for separating fibrous material, for use with textile machines, particularly open end spinning machines. The device includes a housing, a carding roller rotatable in the housing, and feed means for feeding fibrous silver to be separated to the carding roller. A first guide wall portion is located downstream of the feed means and defines with the peripheral surface of the carding roller a first clearance whose width tapers in downstream direction. The first clearance extends circumferentially of the carding roller and communicates with a second clearance, located further downstream. The second clearance is defined between the peripheral surface of the carding roller and a second guide wall portion. The width of the second clearance is substantially constant. An outlet passage is provided for fibers which have been separated.

3,775,957

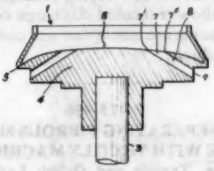
ROTARY SPINNING CHAMBER FOR AN OPEN-END SPINNING MACHINE

Hidetoshi Kihara, Fukui, and Kanemitsu Tsuzuki, Kariya, both of Japan, assignors to Daiwa Boseki Kabushiki Kaisha, Osaka and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Apr. 10, 1972, Ser. No. 242,369
Claims priority, application Japan, Apr. 30, 1971, 46/29269
Int. Cl. D01h *1/12*
U.S. Cl. 57—58.89 **4 Claims**

A rotary spinning chamber for an open-end spinning machine. The chamber has a bottom wall secured to a shaft

for rotatably driving the spinning chamber, the bottom wall extending substantially perpendicularly to the shaft. A collecting surface is formed adjacent to and surrounding the outer periphery of the inner surface of the bottom wall for collecting fibers fed into the spinning chamber through a fiber feeding conduit. A plurality of air exhaust channels is provided for exhausting the air inside the spinning chamber for reducing the air pressure inside the spinning chamber to create an air flow



through the fiber feeding conduit toward the interior of the spinning chamber. The inner surface of the bottom wall gradually bulges in the axial direction of the shaft toward the interior of the spinning chamber as the center of the inner surface is approached, and each of said exhaust channels has the air inlet opening thereof located in the inner surface and the air outlet opening thereof located in an outer peripheral surface of the spinning chamber at a position located radially outwardly of the air inlet opening.

3,775,958

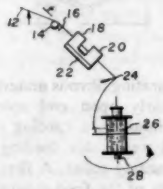
PNEUMATIC FALSE TWISTING INTERLACER

Neil E. Lloyd, and Walter B. Mather, both of Rock Hill, S.C., assignors to Celanese Corporation, New York, N.Y.

Filed June 1, 1970, Ser. No. 42,404

Int. Cl. D02j *1/08*; D01h *7/92*

U.S. Cl. 57—77.3 **19 Claims**



Apparatus for interlacing a filament yarn to give it compactness and other characteristics of a twisted yarn comprising a pair of spaced oppositely functioning pneumatic false twisters with the downstream twister having a smaller yarn passage than the upstream twister.

3,775,959

ELECTROSTATIC TEXTURING PROCESS AND APPARATUS THEREFOR

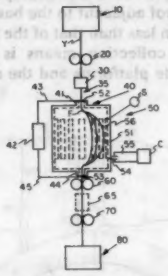
James R. Bond, Spartanburg, S.C., assignor to Hoechst Fibers Incorporated, Spartanburg, S.C.

Filed Mar. 27, 1972, Ser. No. 238,061

Int. Cl. D02g *1/04*; D01h *7/92*

U.S. Cl. 57—77.3 **16 Claims**

A process and apparatus are claimed for electrostatically texturing a multistrand textile material. The textile material is given sufficient charge density to cause the strands thereof to flare and while in the flared state the strands are electrostatically attracted and driven around a closed path, imparting a flase twist thereto. Apparatus is also disclosed and claimed for a twist means including a twist chamber, a plurality of electrodes disposed about the chamber and means for generating a driving charge on the electrodes and moving same therearound. Particularly, pairs of electrodes define a closed path about the chamber and a voltage potential is created



across each pair while a maximum potential is created across one pair. The flared strands are attracted by one of the maximum potential pair of electrodes and repulsed by the other and driven by sequentially moving the maximum potential from pair to pair around the path.

3,775,960

SEWING THREAD AND A METHOD OF PREPARING SAME

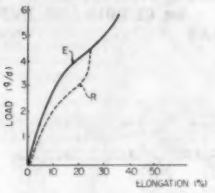
Yasuhiro Ogawa; Kazuo Nooya; Norio Awata, and Yukio Yamakawa, all of Osaka, Japan, assignors to Kanegafuchi Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1970, Ser. No. 78,457

Claims priority, application Japan, Oct. 8, 1969, 44/80993; Nov. 13, 1969, 44/91225; Dec. 8, 1969, 44/98772; Dec. 8, 1969, 44/98773; Apr. 4, 1970, 45/28854; June 25, 1970, 45/55839

Int. Cl. D02g *3/44, 3/02*

U.S. Cl. 57—140 R **8 Claims**



Improved sewing threads having an initial modulus of elasticity in tension of no less than 0.5 g/d, preferably no less than 5 g/d, a breaking elongation of no less than 30 percent and an elastic recovery at 25 percent elongation of no less than 70 percent are described as to their preparation and use. The threads are suitable for machine sewing of stretch fabrics.

3,775,961

YARN PROCESS

Walter D. Womer, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

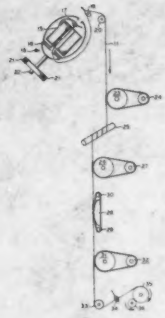
Filed Nov. 22, 1971, Ser. No. 201,053

Int. Cl. D02j *1/22*; D01h *7/86*

U.S. Cl. 57—157 S **11 Claims**

A coherent continuous filament yarn substantially free of barre' is produced at a high production rate by introducing true twist into an undrawn feed yarn free of twist and then drawing the yarn. The true twist can be introduced into the undrawn yarn by the utilization of a 2-for-1 twister. The use of

a Godet roll as the feed roll minimizes filament breakage upon a start-up of the 2-for-1 twister. The Uster of the drawn yarn is minimized by wrapping the twisted yarn around the snubbing pin in the draw zone in the same direction as the direction of



twist in the yarn. The drawn yarn can be simultaneously thermally stabilized and relaxed to provide the desired degree of residual shrinkage while maintaining the desired initial modulus of the yarn. The relaxed and stabilized yarn can be wound into a package without further twisting of the yarn.

3,775,962

CIRCUIT ARRANGEMENT FOR THE DRIVE OF A CLOCKWORK MECHANISM REGULATOR-OSCILLATOR OF A TIMEPIECE

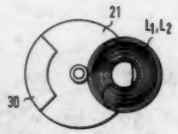
Wolfgang Ganter, Schramberg-Sulgen, and Friedrich Assmus, Schramberg, both of Germany, assignors to Firma Gebruder Junghans G.m.b.H., Schramberg, Germany

Filed July 26, 1972, Ser. No. 275,295

Claims priority, application Germany, July 28, 1971, P 21 37 813.2

Int. Cl. G04c *3/00, 3/04*

U.S. Cl. 58—23 A **9 Claims**



A constant current source is utilized in the bias circuit to prevent variations in the driving impulses of an electronic timepiece resulting from battery voltage decay.

3,775,963

MAGNETIC CLOCK

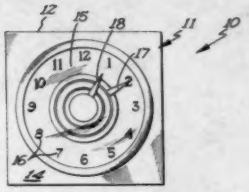
Thomas J. Clapham, 2823 18th Ave. North, Minneapolis, Minn.

Filed Jan. 12, 1973, Ser. No. 323,232

Int. Cl. G04c *3/00;* **G04b** *45/04*

U.S. Cl. 58—23 D **3 Claims**

A magnetic clock comprises an inner revolvable magnetic member and an outer revolvable magnetic member, each being of generally hour glassed shaped and being arranged concentrically with respect to each other. An hour glassed shaped bearing is positioned concentrically between and exerts a repulsive force on the inner and outer members. The inner and outer revolvable magnetic members each have a plurality of circumferentially spaced apart peripheral elements integrally formed therewith which project radially outwardly therefrom. The outer revolvable member has a minute hand secured thereto for movement therewith and the inner revolvable member has an hour hand secured thereto for rotation therewith. An electro-magnet is positioned adjacent the periphery of the outer member and when energized causes the outer magnetic member to rotate through a predetermined arc of approximately 30°. An electrical pulse mechanism is connected to the electro-magnet and is operable to momentarily energize the electro-magnet which causes movement of the



minute hand through the arc which corresponds to a 5 minute increment. The outer revolvable member is also provided with shiftable locking lugs which are shifted for engagement with the inner revolvable member when the outer revolvable member has revolved through an arc of 360°. With this arrangement, the inner revolvable member rotates with the outer member through an arc of 30° and this corresponds to the normal hour hand movement. Suitable magnetic holding means are provided for holding the inner and outer member against movement while the electro-magnet is in an unenergized condition.

3,775,964

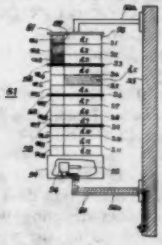
TIME INDICATING APPARATUS

Shigeru Fukumoto, Nishinomiya, Japan, assignor to Kabushiki Kaisha Suncrux Research Office, Higashinada-ku, Kobe, Japan

Filed Aug. 13, 1971, Ser. No. 171,434

Int. Cl. G04b *19/30, 19/06*

U.S. Cl. 58—50 R **11 Claims**



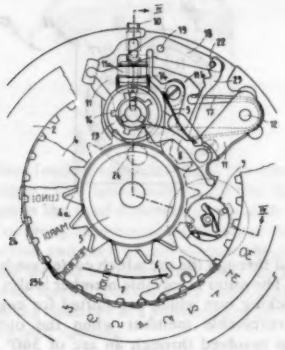
This invention relates to a time-indicating apparatus using neither figures nor pointers, wherein the time-indicating plane is divided into the hour, minute and second indicating sections of a multiple of twelve and electric lamps or the like provided inside said sections are turned on or off by means of a switch connected to the clock mechanism to indicate the time by illuminating said sections successively.

3,775,965

CALENDAR TIMEPIECE

Rene Besson; Ali Schneiter, and Rene Meister, all of Neuchatel, Switzerland, assignors to Ebauches S.A., Neuchatel, Switzerland

Filed May 3, 1972, Ser. No. 249,816
Claims priority, application Switzerland, May 5, 1971, 6678/71
Int. Cl. G04b 19/24
U.S. Cl. 58—58 10 Claims



A calendar timepiece, with indicators of the days of the week and of the dates, comprising a control stem capable of disposition in at least two axial positions, in one of which positions it permits the setting of the timepiece and in the other of which positions it permits the correction of the days and dates indicators, the control stem in the last-named position being connected to one of the indicators of the dates and of the days so that it operates in the two directions, a one-way coupling mechanism being interposed between these two indicators in such a way that, in one direction of rotation of the stem, only one of the indicators is driven while, in the other direction of rotation of the stem, the two indicators are driven, one being driven by the other through the intermediary of the coupling mechanism.

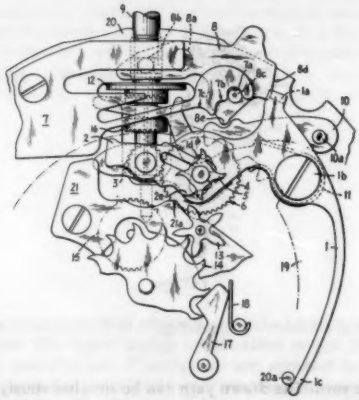
3,775,966

DAY-AND-DATE CHANGING DEVICE FOR A WRIST WATCH

Eiichi Matsuura, Chiba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed July 10, 1972, Ser. No. 270,193
Claims priority, application Japan, July 8, 1971, 46/59903
Int. Cl. G04b 19/24
U.S. Cl. 58—58 10 Claims

A wrist watch is provided with a rotatable day wheel containing indicia denoting the different days of the week and a date ring containing indicia denoting the date. A clutch member is axially slidable along the watch winding stem through a lever system in response to axial movement of the winding stem, and the clutch member is moved into engagement with a winding pinion or a gear system to respectively effect winding of the watch mainspring or changing of the day and date settings in dependence upon the extent of said movement of the winding stem and its direction of rotation. The lever system includes a pivotal setting lever connected to the winding stem and a pivotal clutch lever engageable with and driven by the setting lever to effect axial movement of the clutch member. The clutch lever has a recess therein which cooperates with a projection on the setting lever to disengage the two levers during axial movement of the winding stem



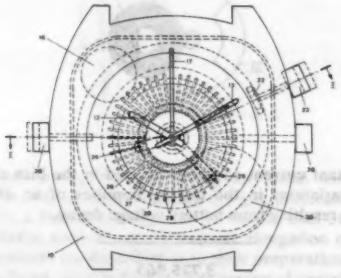
thereby preventing unintentional changing of either the day or date settings during axial movement of the winding stem.

3,775,967

WATCH WITH ADJUSTABLE TIME-DEPENDENT SIGNAL TRANSMISSION

Paolo Spadini, 78 av. Leopold Robert, La Chaux-de-Fonds, Switzerland

Filed Sept. 5, 1972, Ser. No. 286,815
Int. Cl. G04b 23/12; G04c 21/16, 21/34
U.S. Cl. 58—57.5 7 Claims



A watch, especially a wristwatch, with adjustable time-dependent signal transmission and an indicator adjustable to random time positions of the watch dial for determining or fixing the signal time point. An electronically operated storage is provided which has individual storage elements each associated with a predetermined time position. Upon actuation of a switch the time position indicated by the indicator can be extinguishably registered at the relevent or corresponding storage element and when the watch movement reaches the time position associated with such storage element there is triggered transmission of the signal.

3,775,968

DRIVE MECHANISM FOR A WATCH HAVING A BALANCE MOTOR

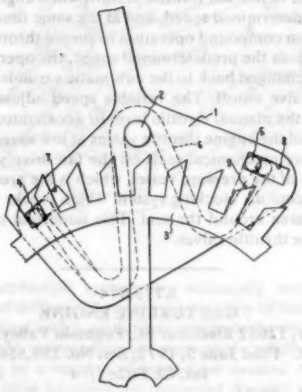
Paul Tuetey, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland

Filed June 29, 1971, Ser. No. 157,989

Claims priority, application Switzerland, July 13, 1970, 10566/70

Int. Cl. G04b *15/00*

U.S. Cl. 58—116 R 7 Claims



Anomalous operation of a lever-driven escapement type wheel driving the hands of a watch is prevented by mounting the two pallets on springs or forming them from a spring, the pallets having free resilient but limited movement in slots formed in the lever, which itself is driven from a balance wheel motor. The dimensions of the parts are such that while one pallet is engaged with the drive face of one tooth of the escapement wheel, the other pallet, engaged with one end of its slot, lodges between two teeth, providing spring-loaded locking of the wheel against reciprocating movement while enabling it to be driven.

3,775,969

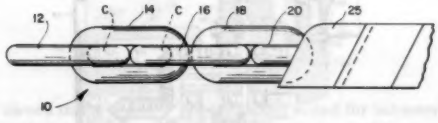
CHAIN WITH ELASTOMERIC MATERIAL

Paul F. Vasterling, Westminster, Calif., assignor to Hitco, Irvine, Calif.

Filed June 9, 1971, Ser. No. 151,326

Int. Cl. F16g *13/24*

U.S. Cl. 59—78 3 Claims



A chain of metal links has an elastomeric material covering the links and substantially filling the clearance spaces between the links. The chain may be in either contracted condition, or in extended condition. All links may be covered, or intermediate link or links may be uncovered, and extend at a angle to the chain axis, and/or end links may be uncovered. The chain is prepared by wrapping a metal chain in helical, overlap fashion with a strip of raw butyl rubber, after which it is heated uner pressure to cause the rubber to fill the clearance spaces in the chain, to cover the links and to become cured.

3,775,970

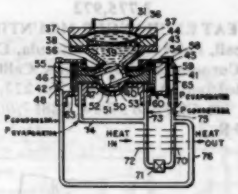
PRESSURE TRANSLATING APPARATUS AND PROCESS

Jaroslav Wurm, Cicero, Ill., assignor to The Institute of Gas Technology, Chicago, Ill.

Filed June 14, 1972, Ser. No. 262,464

Int. Cl. F25b *27/00*; F02g *1/04*

U.S. Cl. 60—6 5 Claims



An apparatus and process for conversion of thermal energy into mechanical energy wherein the working fluid of a heat engine is in contact with one side of a pressure sensitive means such as a piston or diaphragm, the other side of the pressure sensitive means being in contact with an incompressible fluid which in turn is in contact with the first ends of a pair of opposing pistons, the pistons being linked by mechanical linkage, the second end of one piston being in contact with a fluid to be pumped and the second end of the second piston being in contact with a cushion chamber, providing a quiet running thermal engine without dynamically unbalanced forces, with substantially reduced influence on the performance and smooth running of the dynamic instability inherent to free-piston systems generally, and with a positive control of the piston travel. The apparatus is particularly advantageously used in connection with a refrigeration system wherein the backside of the second end of each piston is in contact with the refrigeration fluid at evaporator pressure and the face of the second end of each piston is in contact with the refrigeration fluid at condenser pressure.

3,775,971

SYSTEM FOR CONTROLLING THE SUPPLY OF AIR TO AN INTERNAL COMBUSTION ENGINE

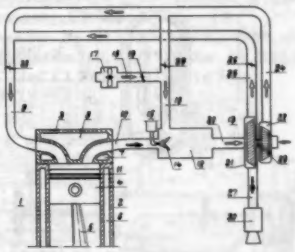
Bengt Georg Gadefelt, Sodertalje, Sweden, assignor to Saab-Scania Aktiebolag, Sodertalje, Sweden

Filed Mar. 28, 1972, Ser. No. 238,770

Claims priority, application Sweden, Apr. 5, 1971, 4410/71

Int. Cl. F02b *37/04*, *41/10*

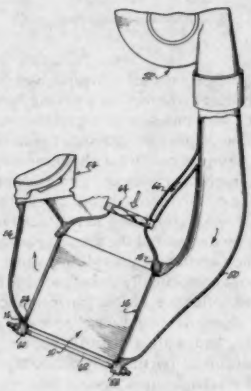
U.S. Cl. 60—13 N 4 Claims



The present invention relates to a system for controlling the supply of air to an internal combustion engine having a supercharging unit which includes an exhaust turbine and a compressor driven thereby, there being arranged in an exhaust line between the engine and the supercharging unit an afterburner to which is fed fresh air from the compressor of the supercharging unit and fuel supplied from a fuel pump. Accord-

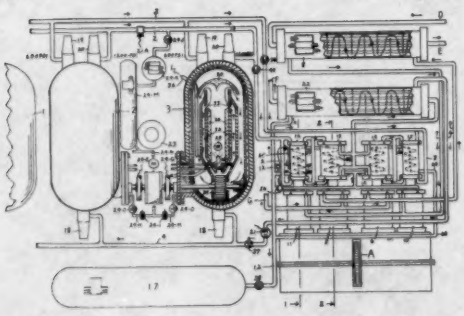
ing to the present invention an electrically driven air pump is arranged to feed supplementary air to the afterburner, and also recirculation means are provided for returning a portion of the exhaust gases from the afterburner to the engine via the exhaust turbine. In this way the torque characteristic of the engine is improved, and also the content of contaminating solid products in the exhaust gases is reduced.

3,775,972
HEAT EXCHANGER MOUNTING
Robert C. Perpall, Palos Verdes Peninsula, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.
Filed Jan. 31, 1972, Ser. No. 222,125
Int. Cl. F02b *37/04*; F28f *7/00*
U.S. Cl. 60—13 R **30 Claims**



Resilient elements are provided for the mounting of a heat exchanger core between structurally joined inlet and outlet ducts.

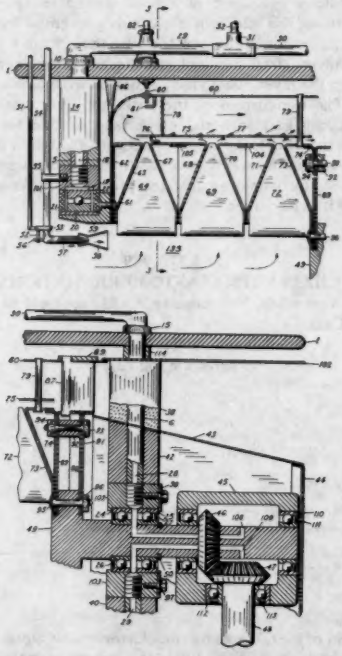
3,775,973
COMBUSTION PRODUCTS PRESSURE GENERATORS INTERMITTENT BURNER CYCLE AND ENGINES
Perry D. Hudson, 515 Delaine Drive, Corpus Christi, Tex.
Filed May 4, 1970, Ser. No. 34,302
Int. Cl. F02g *1/02*
U.S. Cl. 60—39.25 **10 Claims**



This invention comprises improvements in combustion products pressure generators of the intermittent cycle, two stage type, and reciprotating piston engines which use the combustion products the pressure generators produce for power and to drive the air compressors which supply combustion air to the pressure generators. Improvements of the pressure generator include an improved type burner with forced air circulation and dilution of the hot gases with cooler air making for minimum air pollution. Improvements of the reciprocating piston engines are carbon or other anti-friction material in power piston rings and rod seals. A system of maintaining the power cylinder wall at the highest possible working temperature to cut down on the heat loss from the hot gases to the working parts of the power cylinders. Also, poppet type valves in the cylinder heads to make for minimum clearance. Also, a automatic variable speed governor controlling precision cutoff valve action on the charge valves to the power cylinders. This cutoff action is reversible. Also, an automatic changeover mechanism which changes the automatic governor control to manual throttle control when engine speed falls below predetermined speed, and at the same time changes the engine from compound operation to simple throttle speed. If it again exceeds the predetermined speed, the operation is automatically changed back to the automatic variable speed governor and valve cutoff. The variable speed adjustment is controlled by the manual throttle lever or accelerator pedal which also control the engine throttle valves at low speed.

There are mechanical seals on the fan drive shaft where it comes out of the pressure vessel, which is the pressure generator and a cool air blocking system which blocks the hot gases from the area around the seal. This same seal system is also used on the throttle valves.

3,775,974
GAS TURBINE ENGINE
Jack Silver, 12052 Blackmer St., Fountain Valley, Calif.
Filed June 5, 1972, Ser. No. 259,550
Int. Cl. F02c *3/14*
U.S. Cl. 60—39.34 **7 Claims**



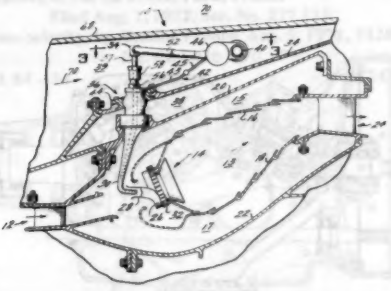
A high speed rotating unit which combines the Brayton cycle functions of mixing fuel and air, centrifugal compression of the combustible mixture, ignition of the said combustible mixture, containment of the products of combustion and utilization of the kinetic energy developed through a unique turbine blading and power take-off.

3,775,975

FUEL DISTRIBUTION SYSTEM

Richard E. Stenger, Cincinnati, and John M. Richey, Fairfield, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Sept. 5, 1972, Ser. No. 286,433
Int. Cl. F02c 7/20, 7/22
U.S. Cl. 60—39.32 8 Claims



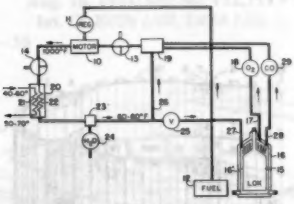
A fuel distribution system for accurately metering the amount of fuel delivered to each of a plurality of fuel injection points associated with a gas turbine engine is shown to include a fuel manifold surrounding and separated radially from the engine casing by a number of hinge-type mounts. A plurality of metering valve housings are mounted directly to the fuel manifold, and a fuel distribution valve is contained within each housing. Fuel is delivered from each housing to an appropriate point on the engine casing via a single pigtail-type fuel delivery tube. Individual tubes and valves and sectors of the fuel manifold are removable without tearing down the entire fuel distribution assembly.

3,775,976

LOX HEAT SINK SYSTEM FOR UNDERWATER THERMAL PROPULSION SYSTEM

Horace E. Karig, La Jolla, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 26, 1972, Ser. No. 257,263
Int. Cl. F02g 1/04; F02m 25/06; B01d 7/00
U.S. Cl. 60—39.33 9 Claims



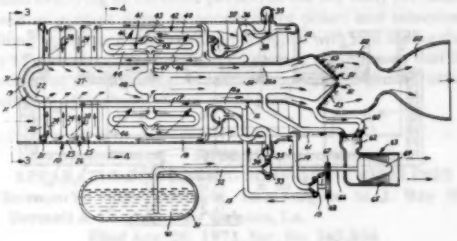
A closed thermal power system ideally suited for submersibles includes an internal combustion engine or turbine connected to feed its exhaust gases to a water cooled condenser for condensing and purging water from the system. Next, a cryogenic source of liquid oxygen receives the gases and carbon dioxide is sublimated to the solid state and stored at low pressure. As carbon dioxide is cooled, oxygen is boiled off and fed to the engine where it is mixed with fuel and recycled portions of the exhaust gases. Because the system is operated at near atmospheric pressures, heavy duty pressure lines and fittings are unnecessary. When the system is operated as an open system in the atmosphere, more liquid oxygen is generated to extend the system's operational range.

3,775,977

LIQUID AIR ENGINE

Carl H. Builder, Sepulveda, and Carl W. Sessler, Reseda, both of Calif., assignors to The Marquardt Corporation, Van Nuys, Calif.

Filed Aug. 23, 1961, Ser. No. 133,445
Int. Cl. F02k 9/02
U.S. Cl. 60—260 13 Claims



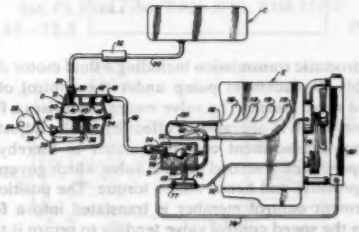
1. A liquid air engine comprising a casing, a centerbody located centrally of the casing and extending along the axis thereof, a plurality of precooler heat exchanger cores extending longitudinally and radially from said centerbody at the entrance to said casing in order to precool incoming air, a plurality of deflector plates extending between adjacent sections of said precooler to impart to said incoming air a partially circumferential direction in order to present the full longitudinal face area of the said heat exchanger sections to the incoming air, a plurality of main cooler heat exchanger cores extending longitudinally and radially from said centerbody, means for directing the air discharged from said precooler sections through the full longitudinal face area of said main cooler cores and a single condenser heat exchanger core of circular configuration located aft of said main cooler sections for liquefying the incoming air, said liquid air being utilized as the coolant in said precooler sections and the warmed air discharged from said precooler cores being fed into said centerbody, a source of liquid hydrogen connected to said condenser sections and then to said main cooler sections for use as the coolant, an inner body within said centerbody for receiving the hydrogen discharged from said main cooler cores, a combustion chamber located at the aft end of said centerbody, and means at the end of said centerbody for ejecting the hydrogen from said inner body into a thrust chamber and for ejecting the air into said thrust chamber through said hydrogen for combustion therein.

3,775,978

WASTE DISPOSAL SYSTEM AND METHOD

Alfred C. Body, Cuyahoga, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation of Ser. No. 843,585, July 22, 1969, abandoned. This application Jan. 31, 1972, Ser. No. 222,129
Int. Cl. F01n 3/02; B01d 3/00
U.S. Cl. 60—317 8 Claims

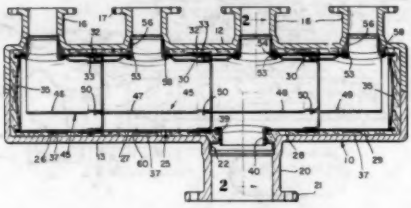


A human conveyance having a toilet and a fuel burning engine is provided with an arrangement for feeding waste from the toilet to the fuel burning engine where the waste is burned and vaporized.

3,775,979
EXHAUST GAS MANIFOLD

George E. Scheitlin, c/o Arvin Industries, Inc., 1531 E. 13th St., Columbus, Ind., and David Ray Bentley, 6040 Acres Rd., Sylvania, Ohio

Filed Dec. 3, 1971, Ser. No. 204,494
Int. Cl. F01n *3/10*
U.S. Cl. 60—322 14 Claims

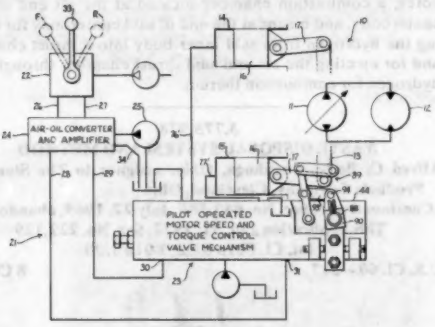


An exhaust gas manifold for an internal combustion engine having an outer shell provided with a plurality of inlets adapted to be connected to the engine and an outlet adapted to be connected to an exhaust pipe. A closed intermediate shell is carried within the outer shell and is provided with an outlet carried in the outer shell outlet. An inner shell is carried within the intermediate shell in open communication therewith. A plurality of inlets carried in the outer shell inlets are open to the inner shell so that the exhaust gases enter said inner shell and pass therefrom into said intermediate shell from which they are discharged through the intermediate and outer shell outlets.

3,775,980
HYDROSTATIC TRANSMISSION

Jack P. Spirdco, New Berlin, Wis., assignor to Koehring Company, Milwaukee, Wis.

Filed Sept. 13, 1972, Ser. No. 288,650
Int. Cl. F16h *39/46*
U.S. Cl. 60—462 13 Claims

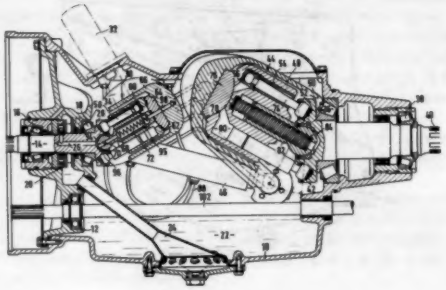


A hydrostatic transmission including a fluid motor driven by a variable displacement pump under the control of a pilot operated valve means. The valve means comprises a first control valve which is operable to effect hydraulic adjustment of the pump displacement control member to thereby govern motor speed, and a second control valve which governs pump output pressure and hence motor torque. The position of the displacement control member is translated into a feedback force on the speed control valve tending to return it to closed position; and the pressure in the hydraulic actuator for the displacement control member is translated into a feedback force on the second control valve tending to return it to its null position.

3,775,981
HYDROSTATIC DRIVE UNIT

Hans Molly, Dr. Eugen-Essig-Strasse 48, Malsch, Germany

Filed Feb. 1, 1972, Ser. No. 222,604
Claims priority, application Germany, Feb. 4, 1971, P 21 05 119.4
Int. Cl. F16h *39/46*
U.S. Cl. 60—490 9 Claims

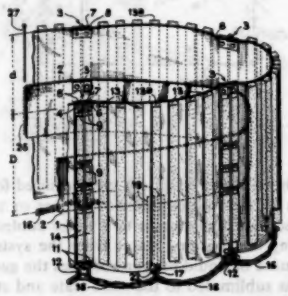


A hydrostatic drive unit comprises a pump driven by a prime mover and having constant delivery during normal operation, and at least one variable stroke axial piston-type motor fed by the pump. The intake volume per revolution of the motor is variable by pivoting the cylinder block about an off-center pivot axis through an angle of more than 30° such that the dead space in the cylinders is kept as small as possible. The intake volume per revolution of the motor at maximum pivot position is a multiple of the delivery volume per revolution of the pump. The cylinder block of the motor is carried along by the drive flange through peripherally arranged teeth in mesh in the region of the pivot axis and permitting the pivoting movement of the cylinder block.

3,775,982
ANTI-POLLUTION BARRIER

Gilbert Andre Lamboley, Sartrouville, France, assignor to Etablissements Hutchinson Compagnie Nationale du Caoutchouc, Paris, France

Filed Apr. 18, 1972, Ser. No. 245,161
Claims priority, application France, Apr. 21, 1971, 7114187
Int. Cl. E02b *15/04*
U.S. Cl. 61—1 F 10 Claims



Anti-pollution barrier for aquatic regions comprising a watertight skirt and floats and ballast connected to the skirt. A longitudinal semi-rigid tension strip is rigidly fastened to the skirt at spaced apart points so as to form skirt segments which are longer than corresponding segments of the tension strip

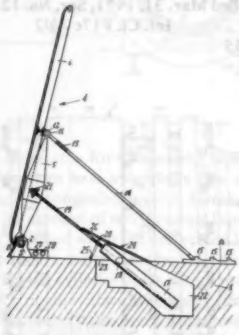
and constitute arch-shaped skirt portions. The strip is located substantially midway between the top and bottom edges of the skirt and is fastened to the skirt by a plurality of stiffening means at said points. Each stiffening means defines faces between which the strip is clamped against the skirt.

3,775,983

MOVABLE GATE SYSTEM FOR A HYDRAULIC DAM

Jean Aubert, 8, rue La Boetie, Paris, France

Filed Aug. 1, 1972, Ser. No. 277,111
Claims priority, application France, Aug. 5, 1971, 7128734
Int. Cl. E02b *7/40*
U.S. Cl. 61—26 **12 Claims**



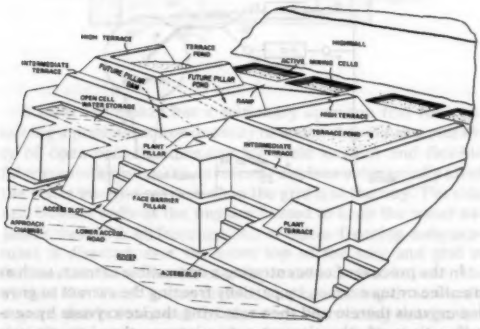
A device for operating at least one shutter of a movable dam comprises an oscillating guide pivoted on a horizontal pin which is attached to the body or floor of the dam, a push-rod capable of translational motion with respect to the oscillating guide and an abutment member which is orientable about a horizontal shaft attached to the shutter, the abutment member being adapted to receive the extremity of the push-rod which is applied against the abutment member during operation of the shutter.

3,775,984

MINING METHOD AND METHOD OF LAND RECLAMATION

Clifton W. Livingston, 624 Panorama Dr., Grand Junction, Colo.

Division of Ser. No. 14,166, Feb. 25, 1970. This application Aug. 18, 1971, Ser. No. 172,711
Int. Cl. E02b *1/00*; E02d *3/00*
U.S. Cl. 61—35 **20 Claims**



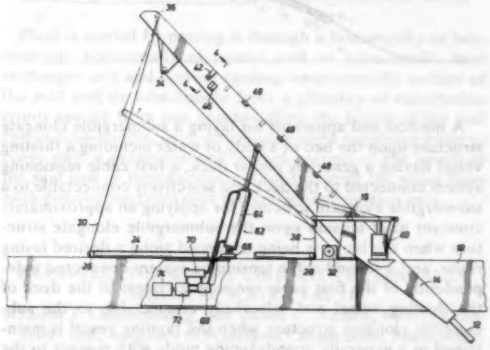
A mining method including land reclamation and hydropower and water resources development including removing the ore from the ore body in a predetermined pattern so that the remaining ore body defines a grid network of cellular units, the ore removal being performed progressively such that adjacent cellular units are in various stages of development simultaneously and filling the mined-out cells with overburden from adjacent ore body; constructing terrace ponds above the elevation of the top of the mined-out cells, the terrace ponds being constructed from overburden material; constructing dams between adjacent terrace ponds, the dams overlying an elevated portion of the ore body previously used as a plant pillar or access entry pillar; and selectively filling the terrace ponds and pillar ponds with mill tailing slurry to a predetermined reclaimed surface elevation so that the reclaimed surface consists predominantly of a slime fraction suited to agricultural re-use of the land.

3,775,985

APPARATUS FOR LAYING SUBMARINE PIPELINES

Clarence W. Shaw, Metairie, La., assignor to J. Ray McDermott & Co., Inc., New Orleans, La.

Filed Apr. 20, 1971, Ser. No. 245,856
Int. Cl. F16l *1/00*
U.S. Cl. 61—72.1 **7 Claims**



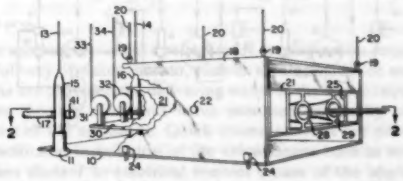
On a submarine pipeline laying barge having a pivoted inclined ramp for paying out the pipe string in a single catenary manner, a dampener is provided to reduce the movement of the ramp relative to the barge. Means are also provided to lock the ramp relative to the barge when a new section of pipe is on the ramp. The new sections of pipe are handled by means of cables secured to removable swivel caps on each end and controlled from a single operator's console.

3,775,986

METHOD AND APPARATUS FOR MAKING REMOTE PIPELINE CONNECTIONS

Arthur C. Daughtry, Houston, Tex., assignor to Esso Production Research Company, Houston, Tex.

Filed Apr. 27, 1972, Ser. No. 248,077
Int. Cl. F16l *1/00*; E02b *3/16*; F16l *35/00*
U.S. Cl. 61—72.3 **19 Claims**



An underwater pipeline is connected to a submerged production system or other underwater equipment by pulling

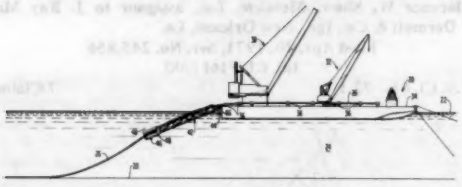
the end of the pipeline into a manipulating structure installed adjacent the underwater equipment, moving the end of the pipeline into a predetermined position with respect to a corresponding pipe to which the pipeline is to be connected, lowering a remote connector into place adjacent the ends of the pipeline and corresponding pipe, and thereafter actuating the remote connector.

3,775,987

METHOD AND APPARATUS FOR LAYING A SUBMERGIBLE ELONGATE STRUCTURE

William R. Rochelle, and Leif H. Smith, both of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed July 11, 1972, Ser. No. 270,736
Int. Cl. B63b *35/04*; F16l *1/00*
U.S. Cl. 61—72.3 **11 Claims**



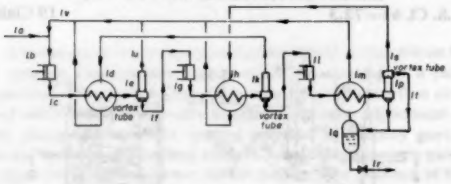
A method and apparatus for laying a submergible elongate structure upon the bed of a body of water including a floating vessel having a generally planar deck, a first cable tensioning system connected to the deck and selectively connectable to a submergible elongate structure for applying an approximately constant axial tension upon the submergible elongate structure when the barge is being advanced along a desired laying route, and a second cable tensioning system connected independently of the first cable tensioning system to the deck of the floating vessel and selectively connectable to the submergible elongate structure when the floating vessel is maintained in a generally nonadvancing mode with respect to the intended pipelaying route. A unitary submergible ramp is pivotally connected to the stern of the floating vessel and includes a plurality of vertically adjustable supporting rollers for supporting the submergible elongate structure within the body of water aft of the floating vessel.

3,775,988

CONDENSATE WITHDRAWAL FROM VORTEX TUBE IN GAS LIQUIFICATION CIRCUIT

Lancelot A. Fekete, 1632 Colquitt, Houston, Tex.

Continuation-in-part of Ser. No. 585,213, Oct. 7, 1966, abandoned. This application May 23, 1969, Ser. No. 828,111
Int. Cl. F25j *1/00*, *3/02*
U.S. Cl. 62—23 **7 Claims**



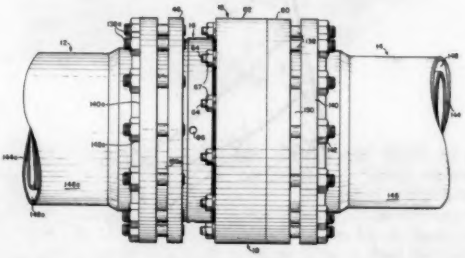
The diclosure is directed to methods of gas separation wherein controlled flow vortex tube expansion principles are employed in liquefaction and cold producing processes; a multi-stage low pressure and a multi-stage high pressure process being involved. The vortex tube is introduced in the parent application as being employed in cases with more efficiency than the expansion turbine. Herein, by addition, support figures are supplied for these cases, and also vortex tube separation processes are shown capable of replacing rectification column processes; liquefaction and separation processes using controlled flow vortex tubes with double purpose being submitted herein as new.

3,775,989

ROTARY CRYOGENIC COUPLINGS

Richard C. Mursinna, San Diego, and David L. Martindale, La Mesa, both of Calif., assignors to Amtek, Inc., New York, N.Y.

Filed Mar. 31, 1971, Ser. No. 129,901
Int. Cl. F17c *7/02*
U.S. Cl. 62—55 **28 Claims**



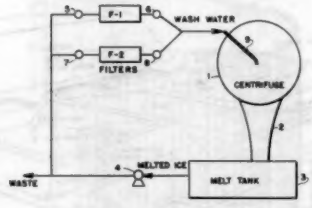
Cryogenic liquid handling components connected for relative rotational movement by a coupling which includes two relatively rotatable sub-assemblies connectable to the cryogenic components, components forming a liquid flow path through the sub-assemblies, and components for reducing the transfer of heat through the coupling and the coupling-cryogenic component interfaces to liquid flowing through the coupling and the cryogenic components.

3,775,990

ALTERNATING FILTERS FOR ICE WASH WATER IN COFFEE CONCENTRATION

Yudkoff Norman Neophytos Ganiaris, Riverdale, N.Y., assignor to Struthers Patent Corporation, Huntsville, Tex.

Filed Sept. 24, 1970, Ser. No. 75,036
Int. Cl. A23f *1/08*
U.S. Cl. 62—58 **1 Claim**



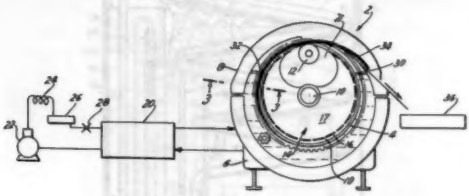
In the process of concentrating a comestible extract, such as a coffee or tea extract, by partially freezing the extract to grow ice crystals therein and then removing the ice crystals by centrifugation of the ice-extract mixture, the ice crystals separated by the centrifugation are melted, filtered, and used as a wash liquid sprayed over the ice crystals in the centrifugation step.

3,775,991

ICE MAKING MACHINE AND METHOD

Crosby Field, 8029 Harbor View Ter., Brooklyn, N.Y.

Filed Feb. 23, 1972, Ser. No. 228,554
Int. Cl. F25c *1/14*
U.S. Cl. 62—72 10 Claims



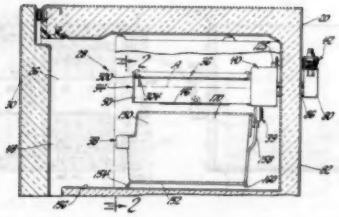
A method and apparatus for congealing liquids wherein a refrigerating fluid carries heat away from one side of a heat-conducting wall and a congealed layer is formed on the other side of the wall. The amount of refrigerating liquid supplied to the wall surface is reduced when the congealed layer builds up sufficiently to produce a major heat transfer bottleneck. The apparatus has a freezing cylinder drum which rotates in a body of water with its top portion above the water surface where an internal roller deflects the cylindrical drum and peels the ice free. The ice contains a low concentration of boron which is substantially identical with the concentration of boron in the water.

3,775,992

METHOD AND APPARATUS FOR MAKING CLEAR ICE

James A. Bright, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed July 17, 1972, Ser. No. 272,410
Int. Cl. F25c *5/08*
U.S. Cl. 62—73 14 Claims



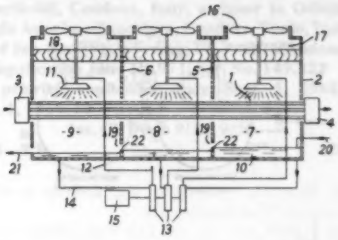
A clear ice maker has a stationary open-top tray for containing a predetermined quantity of water. A grid has a plurality of open-bottom, open-top ice mold cavities and flexible filler means between the cavities to displace substantially all of the water into the cavities when the grid is in the tray. The side and bottom walls of the tray are heated to keep the water adjacent thereto from freezing. Air at below-freezing temperatures is directed over the open top of the tray and grid to freeze water into clear ice starting at the interface between the air and the water in the cavities and continuing downwardly toward the bottom wall of the tray. Harvesting mechanism periodically removes the grid and clear ice from the tray before the air has frozen the water in the cavities to the bottom wall of the tray; and then twists the grid to release the clear ice into a storage bucket.

3,775,993

ART OF EVAPORATIVE COOLING

Edmund Murphy, Ortonovo, Italy, assignor to Ruckluft Patent AG, Luzern, Switzerland

Filed May 31, 1972, Ser. No. 258,364
Claims priority, application Great Britain, June 4, 1971, 18,973/71
Int. Cl. F25d *17/06*
U.S. Cl. 62—95 8 Claims



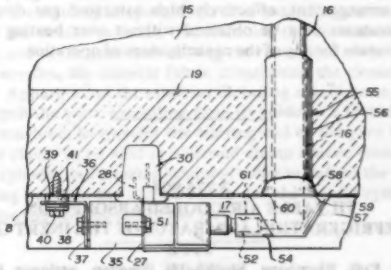
Fluid is cooled by passing it through a horizontally or substantially horizontally elongated coil or tube-bundle heat exchanger unit and flowing cooling water over the surface of the said coil or tube-bundle from a plurality of distribution points spaced from one another along the length of the said coil or tube-bundle, each distribution point supplying water to cover only a predetermined limited portion of the length of the said coil or tube-bundle and recirculating the water from each distribution point over the said limited portion only.

3,775,994

REFRIGERATOR OR THE LIKE WITH EXTERNALLY MOUNTED WATER VALVE

William J. Linstromberg, and Duane C. Nichols, both of Evansville, Ind., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 3, 1971, Ser. No. 177,639
Int. Cl. F25d *17/06*
U.S. Cl. 62—177 11 Claims

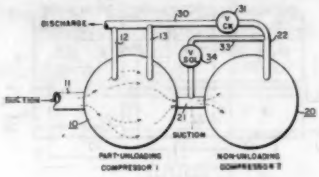


An appliance, such as a refrigerator, having means requiring the delivery of water thereto, such as an automatic ice maker. Means are provided for delivering water to the water requiring means through a control valve mounted externally of the cabinet of the appliance. Quick connect means are provided for facilitated installation of the valve means both as to connection thereof to electrical control means of the appliance and to the water requiring means. The valve may be mounted in a suitable recess in the cabinet which may be provided in the rear wall adjacent the water requiring means for simplified connection therebetween.

3,775,995
VARIABLE CAPACITY MULTIPLE COMPRESSOR REFRIGERATION SYSTEM

Thomas F. Conley, Staunton, and Ernest F. Gylland, Jr., Waynesboro, both of Va., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 17, 1972, Ser. No. 272,704
Int. Cl. F25b *41/00*
U.S. Cl. 62—196 6 Claims



A variable capacity multiple compressor refrigeration system having first and second compressors with the first compressor to be always running when the system is operating and the second compressor to be cycled off or to vary the capacity of the system on while the first compressor continues to run. The discharge lines of both compressors are connected together in parallel to the system and a check valve is provided in the discharge line connection between the compressors to prevent discharge pressure from the operating compressor from entering the discharge port of the non-running compressor. A by-pass line connects the suction of the system at the inlet of the second compressor to its discharge line between the check valve and its discharge port and a solenoid valve in the by-pass line is arranged to be closed when the second compressor is running and open when it is cycled off.

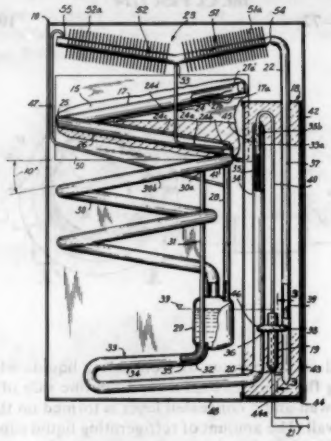
In one form of the invention, both compressors are multiple cylinder hermetic shell compressors and the inlet of the second compressor is connected to the system through the shell of the first compressor. Also, the first compressor is provided with unloading mechanism to unload some of its cylinders for part unloaded operation, so that four steps of different capacity may be obtained by running the first compressor either loaded or partly unloaded while the second compressor is cycled off or on and therefore, with the aforementioned inlet arrangement, effectively high saturated gas discharge temperatures may be obtained without over heating either compressor for any of the capacity steps of operation.

3,775,996
TILTABLE AIR-COOLED ABSORPTION REFRIGERATION APPARATUS OF THE INERT GAS TYPE

Peter Erik Blomberg, Stockholm, Sweden, assignor to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Mar. 16, 1972, Ser. No. 235,366
Int. Cl. F25b *15/10*
U.S. Cl. 62—490 1 Claim

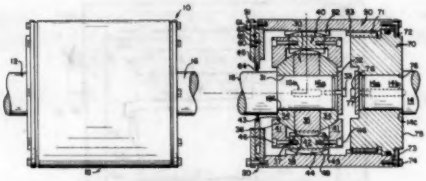
Absorption refrigeration apparatus of the inert gas type is disposed in a vertically extending plane when it is being operated to produce useful refrigeration. Vapor and liquid flow at the same time in parts of the apparatus formed of piping which, when the apparatus is upright, is inclined to the horizontal at an angle greater than 4° and within a range of 20°. By introducing liquid to a supply line at a sufficient height for gravity flow to the piping during operation of the apparatus liquid will always flow to the piping when the apparatus is tilted to either side from the vertical in the vertically extending plane through an angle not exceeding the angle at which the piping is inclined to the horizontal when the apparatus is upright.



3,775,997
GEAR TYPE COUPLING

Kenneth K. Carman, Ellicott City, Md., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed May 18, 1972, Ser. No. 254,396
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 12 Claims



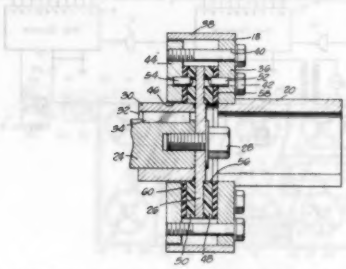
A gear type coupling provides for misalignment between the axes of substantially co-axial interconnected shafts. An outer sleeve encloses coupling components and includes radially inwardly extending gear teeth. An outer hub member, within the sleeve, has radially outwardly extending gear teeth for meshing with the sleeve gear teeth and also includes radially inwardly extending gear teeth. An inner hub member, within the outer hub member, has radially outwardly extending gear teeth for meshing with the inner gear teeth of the outer hub. The inner and outer hubs are angularly pivotable relative to each other and relative to the sleeve to compensate for shaft misalignment. Pilot means comprising special bearing surfaces on the outer hub engage corresponding bearing surfaces on the inner hub for maintaining radial concentricity between the inner and outer hubs and to limit angular deflection to a common point along the axis of the coupling.

3,775,998

SAFETY CLUTCH

Bernard A. Century, Cleveland Heights, and Michael Linsay, South Euclid, both of Ohio, assignors to Allied Steel & Tractor Products, Incorporated, Cleveland, Ohio

Filed Apr. 14, 1972, Ser. No. 244,023
Int. Cl. F16d 7/02
U.S. Cl. 64—30 D 17 Claims



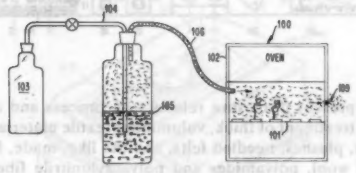
A safety clutch to be used in conjunction with a horizontal earth boring machine. The clutch is located between the boring machine and the auger. The clutch acts as a safety device to prevent over-turning of the boring machine when the auger becomes bound in the earth, prevents stalling of the drive unit, and limits the loadings on the power-train elements and the auger. The safety clutch comprises a drive plate compressed between friction disks having resilient backing elements. These friction disks and backing elements are fixed to the driven side of the clutch.

3,775,999

METHOD OF SEALING ELECTRODES TO GLASS WITH A GLASS FRIT

Betty J. Foster, and Rao R. Tummala, both of Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 8, 1972, Ser. No. 260,788
Int. Cl. C03c 17/04
U.S. Cl. 65—50 11 Claims



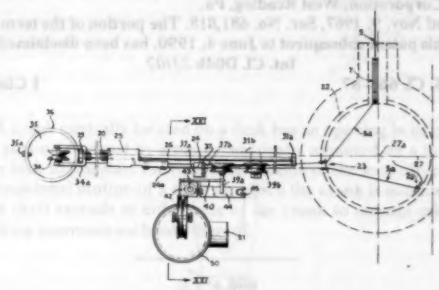
A method of making a gaseous discharge display and/or memory device in which no separate passivation step is required to protect the electrical conductors formed on a glass substrate. After a dielectric glass frit slurry is sprayed over the conductors and dried, the assemblage is fired in an oven to cause the dielectric to reflow and, when later cooled, to provide a smooth protective dielectric layer over the conductors. Applicants found that firing in a very wet atmosphere with neutral or oxidizing ambients causes the dielectric to reflow at a substantially lower temperature than it would in a similar but dry atmosphere. This desirably permits dielectrics of higher viscosity and consequently higher softening temperatures to now be used because the requisite firing temperature is reduced in the wet atmosphere. High viscosity dielectrics are preferred to minimize crazing of the magnisium oxide coating that is currently placed over the dielectric coating after the dielectric-substrate is cooled. Except for this reduction in firing temperature, these high viscosity dielectircs would have to be fired at temperatures over 600° C., which undesirably causes warping of the soda-lime silica glass substrates currently available.

3,776,000

KNITTING OF STOCKING TOES ON CIRCULAR KNITTING MACHINES

Franco Gariboldi, Condove, Italy, assignor to Officine Moncenisio gia Anonima Bauchiero, Condove, Turin, Italy

Division of Ser. No. 851,265, Aug. 19, 1969, abandoned. This application June 2, 1971, Ser. No. 149,322
Claims priority, application Italy, Sept. 5, 1968, 53050 A/68; Feb. 1, 1969, 50390 A/69
Int. Cl. D04b 9/16, 9/56
U.S. Cl. 66—9 R 20 Claims



A circular hosiery knitting machine closes the toe pocket of hose during its formation, the toe closure is accomplished by holding the starting end of suitable yarn, forming a selvage course of the yarn spaced needles by rotary knitting, forming a plurality of following courses of the yarn upon progressively increasing numbers of needles by rotary knitting until all of the needles are so used, exerting yieldable tension upon the starting end of the yarn during the formation of the courses thereby diametrically constricting the same, the so constricted courses progressively increasing in size and in number of wales to form a circularly shaped fabric area extending across the bore of the needle cylinder, discontinuing the tension on the starting end of the yarn and knitting the remainder of the hose on the needles, the circular fabric constituting the closed toe pocket. Apparatus on the machine including a hook to engage and to pull the yarn, extending from its guide to a first clamp on the machine, to transfer the starting end of the yarn from the first clamp to be held in a second clamp spaced from the needle cylinder and a spring mounted roller to deflect the yarn extending between the second clamp and the needle cylinder to tension the starting end of the yarn.

3,776,001

SELF-LUBRICATING COMPOUND FOR USE IN HYGIENIC AND MEDICAL APPLICATIONS, AND SUPPOSITORIES MADE THEREFROM

David E. Hanke, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Division of Ser. No. 127,818, March 24, 1971. This application Jan. 16, 1973, Ser. No. 324,092
Int. Cl. A61f 15/00
U.S. Cl. 128—271 14 Claims

A self-lubricating compound especially suitable for hygienic and medical applications, such as for coating tampons and as suppository structures. The compound contains a ther-

moplastic film-forming water-soluble polymer, a compatible plasticizer for the polymer, and a lubricant. The lubricant is characterized by the ability to form a homogeneous blend, an intimate physical mixture, or a solution with the polymer at elevated temperatures when the blend or solution is in a fluid state while being incompatible therewith at lower temperature when the blend solidifies. In the solidified state of the compound the lubricant may exist as discrete globules dispersed throughout the compound, and the globules which are disposed on and close to the exposed surface of the solidified blend tend to merge whereby a lubricous film is provided on that surface. The compound is thermoplastic and may be cast, thermoformed, hot melt dip-coated, or transfer molded.

3,776,002

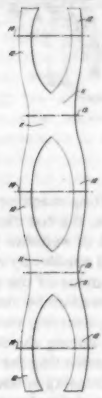
FURCATED GARMENT

Robert C. Howard, Wyomissing, Pa., assignor to Wyomissing Corporation, West Reading, Pa.

Filed Nov. 9, 1967, Ser. No. 681,818. The portion of the term of this patent subsequent to June 4, 1990, has been disclaimed.

Int. Cl. D04b *23/02*

U.S. Cl. 66—87 **1 Claim**



Tubular furcated garments having a unitary, seamless construction are knitted continuously on raschel warp knitting machines. If desired, the garments may be knitted with laid-in patterns that are different in the body portion from the laid-in patterns of the furcated portions of the garment.

3,776,003

SAVING MOTION FOR CONTROL MEANS ON KNITTING MACHINES

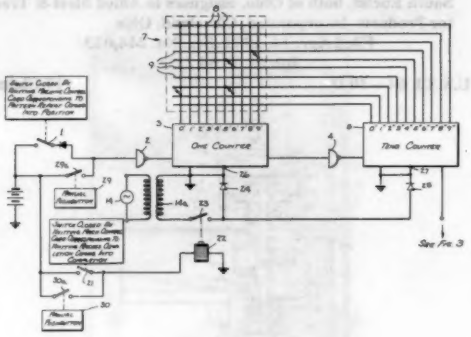
Erich Krause, Bopfingen, Germany, assignor to Universal Maschinenfabrik Dr. Rudolf Schieber KG

Filed Feb. 25, 1972, Ser. No. 229,523

Int. Cl. D04b *15/66*

U.S. Cl. 66—154 A **4 Claims**

A control circuit for producing signals which change the normal movement of control cards, and the like, in knitting machines. The circuit includes a pair of decade counters with the count terminals of one sewing as output terminals and cross connected via a distributor with the count terminals of the other, serving as input terminals.



3,776,004

APPARATUS FOR THE CONTINUOUS TREATMENT OF THICK, VOLUMINOUS TEXTILE MATERIALS

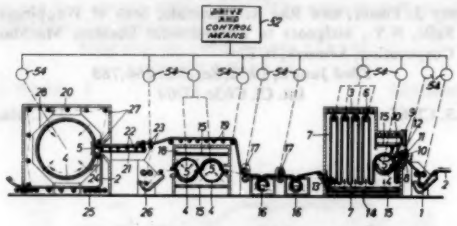
Heinz Fleissner, Egelsbach near Frankfurt am Main, Germany, assignor to Vepa AG, Basel, Schweiz, Switzerland

Division of Ser. No. 662,084, Aug. 21, 1967, abandoned. This application Mar. 20, 1972, Ser. No. 235,906

Claims priority, application Germany, Aug. 20, 1966, V 31756

Int. Cl. B05c *3/12, 9/14*

U.S. Cl. 68—5 E **30 Claims**



The present disclosure relates to a process and apparatus for the treatment of thick, voluminous textile materials such as carpets, plushes, needled felts, and the like, made, for example, of wool, polyamides and polyacrylonitrile fibers. More particularly, the present disclosure is directed to a process and apparatus for dyeing or printing large widths of thick, voluminous textile materials which comprises applying the dyestuffs and auxiliary agents to the textile material, heat-treating said textile material in a heating-up zone, steam-treating the textile material to set the dyestuffs in a dwell zone, washing the textile material and drying the textile material with hot air.

3,776,005

APPARATUS FOR DYEING AND/OR WASHING FABRIC

Robert Kenneth Rogers, 4109 Glen Laurel Dr., Raleigh, N.C.

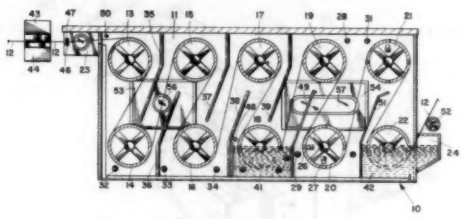
Filed Oct. 13, 1971, Ser. No. 188,870

Int. Cl. D06f *37/02*

U.S. Cl. 68—5 E **14 Claims**

A machine is disclosed for continuously washing and/or dyeing a moist web of fabric while the web of fabric passes

therethrough. The machine comprises a processing chamber in which a plurality of drums define a path of travel therethrough for the web of fabric. Steam is introduced into the chamber to provide a humid atmosphere therein to heat the fabric. At least some of the drums are heated to a temperature above the ambient temperature to apply heat directly to the fabric raising it above the temperature obtainable by use of a steam chamber alone. Additional heat is introduced into the chamber by heated panels mounted adjacent to the path of



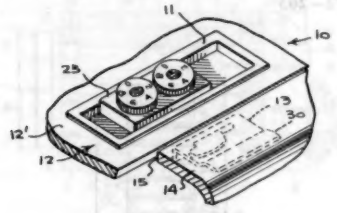
travel of the fabric between adjacent drums which serves to maintain the temperature of the fabric as it passes from one heated drum to the next. The path of travel of the fabric passes through at least one trough which may contain water or other cleaning fluids therein to wash the fabric at elevated temperatures. The cleaning fluid (water) is also sprayed onto the fabric as it moves along its path to aid in the washing operation. Particular constructional features of the machine are disclosed which aid in washing and/or dyeing the fabric passing therethrough.

3,776,006

COMBINATION LOCK CONSTRUCTION

Wallace E. Atkinson, Petersburg, Va., assignor to Long Manufacturing Co., Inc., Petersburg, Va.

Filed May 20, 1971, Ser. No. 145,310
Int. Cl. A45c *13/10*; E05b *65/48*
U.S. Cl. 70—74 **12 Claims**



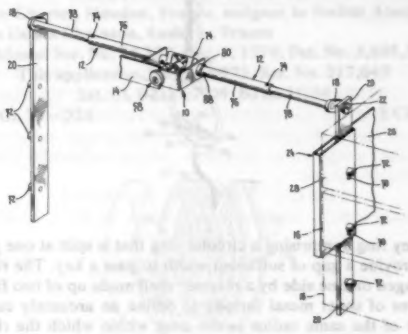
A combination lock structure for luggage cases and the like, having a cup member defining a forwardly opening well and a lock housing nested in the well and movable between latching and release positions. A pair of manually adjustable dial wheels carried on the front of the lock housing control hub members which extend through specially shaped openings in a fence plate or slide plate which normally locks the housing against movement from latching position. When the dial wheels are turned to the proper lock combination, the hub members permit movement of the fence plate or slide plate to a position releasing the housing for unlatching movement. The dial wheels are releasibly coupled to their associated hub members to permit relative movement for changing the combination when the lock is unlocked and in unlatching position.

3,776,007

LOCKING MECHANISM

Ernst G. Himsl, Kitchener, Ontario, Canada, assignor to Massey-Ferguson Industries Limited, Toronto, Ontario, Canada

Filed Sept. 7, 1972, Ser. No. 287,148
Int. Cl. E05b *65/46*
U.S. Cl. 70—86 **6 Claims**



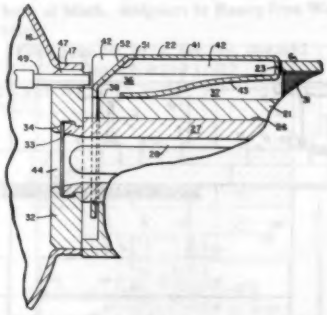
A crank centrally located on a desk has an opening in its offset portion engaged by a pin eccentrically mounted on a tumbler lock to translate the rotational motion of the lock directly to rotational motion of a shaft on which the crank is mounted. The shaft extends to either side of the crank to actuate other locking means on each side thereof.

3,776,008

REMOVABLE CYLINDER FOR A LOCKSET

Ernest L. Schlage, Burlingame, Calif., assignor to Schlage Lock Company, San Francisco, Calif.

Filed May 11, 1972, Ser. No. 252,487
Int. Cl. E05b *9/04*
U.S. Cl. 70—368 **9 Claims**



A lockset includes a spindle tubular about an axis and having a wall opening. A knob is fastened on the spindle and has an aperture in axial alignment with the spindle. A cylinder body having a radially projecting tongue is disposed to slide in the spindle and move through the aperture except as obstructed by the tongue situated in the opening and confined by the marginal walls of the spindle and of the knob. The tongue can be cammed into a non-obstructing position by a tool moved in an axial direction against the tongue. A key-actuated plug is rotatable within the body between a locked position blocking access by the tool to the tongue and another position affording access by the tool to the tongue.

3,776,009
KEY RING

Paul V. MacGlashan, Poway, Calif., assignor to Paul Engel and James C. Armstrong

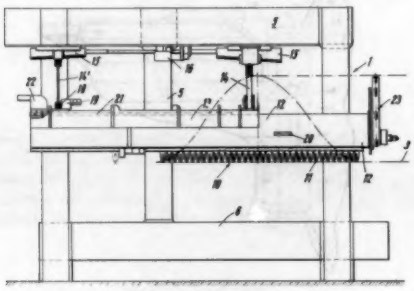
Filed May 19, 1972, Ser. No. 254,959
Int. Cl. A44b 15/00
U.S. Cl. 70—459 1 Claim

Key ring comprising a circular ring that is split at one point to provide a gap of sufficient width to pass a key. The ring is engaged on one side by a retainer shell made up of two facing halves of sheet metal formed to define an arcuately curved bore of the same radius as the ring, within which the ring is slidably received. The ring can revolve about its axis by sliding lengthwise through the arcuate bore, so as to expose the gap for the purpose of inserting a key on the ring or removing same, or it can be turned to retract the gap into the retainer shell, where it is engaged by a spring-loaded locking detent having an end that drops down into the gap to prevent the ring from turning.

3,776,010
DEVICE FOR HELICALLY DEFORMING A BAND TO FORM A TUBE

Heinz Krakow, Hamburg, Germany, assignor to Blohm & Voss AG, Hamburg, Germany

Filed Oct. 26, 1971, Ser. No. 192,135
Claims priority, application Germany, Oct. 30, 1970, P 20 53 266.5
Int. Cl. B21b 37/00; B21d 5/14
U.S. Cl. 72—12 22 Claims

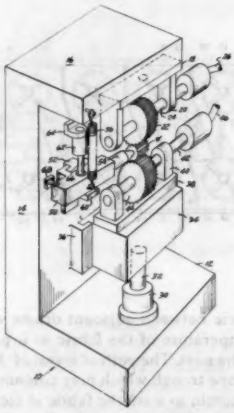


A device for helically deforming a sheet metal band into the form of a tube comprising an inner bending roll and two outer bending rolls, the axes of all of which during the deformation procedure of the sheet metal band may be displaced axially and parallel to each other. In addition, the inner bending roll is vertically adjustable and the two outer bending rolls are each individually vertically and laterally adjustable, and the curvature of the tube while being formed is measured by a scanning device which upon deviations of the tube curvature from a predetermined dimension produces electric impulses which effect an adjustment of the vertical position of the inner bending roll.

3,776,011
DOUBLE DIE GEAR ROLLING MACHINE

Richard W. Tersch, Grosse Pointe Woods, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed May 10, 1972, Ser. No. 252,312
Int. Cl. B21h 5/02
U.S. Cl. 72—94 6 Claims

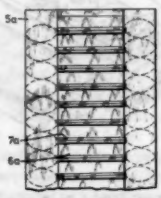


A gear rolling machine has circular gear-like dies, one of which rotates in a fixed position and the other of which moves radially toward and away from the stationary die. A work gear is mounted on a spindle and floats between the dies during the rolling operation, but moves to an intermediate position when the dies are separate.

3,776,012
METHOD OF ROLLING CUTLERY PIECES

Walter Berg, Daaden; Gottfried Hanel, and Heinz Elster, both of Dusseldorf, all of Germany, assignors to Walzmaschinenfabrik August Schmitz GmbH, Dusseldorf-Rath, Germany

Filed May 11, 1971, Ser. No. 142,286
Int. Cl. B21b 1/00
U.S. Cl. 72—203 2 Claims

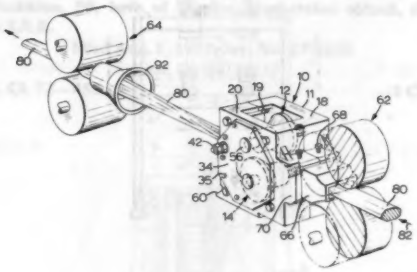


A method of making cutlery articles, especially spoons, forks, and cake servers, of semi-finished sheet metal material, according to which form a web of sheet metal there is punched out a plurality of relatively narrow cutouts extending transversely to the longitudinal direction of said web and one behind the other in the longitudinal direction of the web while each of said cutouts is closed at least at one end thereof with said closed end in spaced relationship to the adjacent side edge of said web, whereupon the thus prepared sheet metal web is rolled so as to widen the width of said cutouts, and cutlery blanks in conformity with the article to be made are punched out of said web.

3,776,013
BAR TWISTER GUIDE

Louis Groh, Bay Ridges, Ontario, and Harry Joseph Jones, Bowmanville, Ontario, both of Canada, assignors to Ferroco Engineering Limited, Whitby, Ontario, Canada

Filed May 25, 1972, Ser. No. 256,747
Int. Cl. B21b *39/26*
U.S. Cl. 72—231 3 Claims

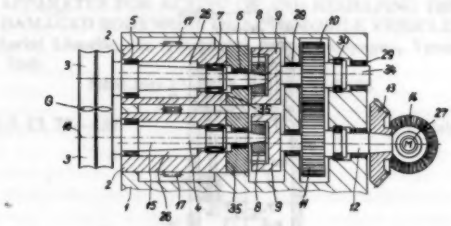


A bar twister guide for use between mill stands, in which a pair of guide rollers are journally mounted on shafts movably axially in a frame. Each roller has an outwardly sloping circumferential shoulder and the two shoulders are in opposed spaced relationship whereby on moving the shafts in opposite directions the gap between the shoulders is adjusted.

3,776,014
DRIVEN ROLLING ASSEMBLY WITH ADJUSTABLE ROLLING GAP

Gerd Artz, Ratingen; Alfred Schumacher, Essen; Rene Marzinkewitsch, Mulheim/Ruhr; Horst-Dieter Hirschfelder, Langenfeld, and Kalus Vortkamp, Neuss, all of Germany, assignors to Fried. Krupp Gesellschaft mit beschrankter Haftung, Essen, Germany

Filed Jan. 13, 1972, Ser. No. 217,452
Claims priority, application Germany, Jan. 27, 1971, P 21 03 734.3
Int. Cl. B21b *31/26*
U.S. Cl. 72—240 7 Claims

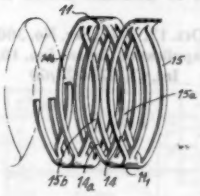


A pair of rolling-mill rolls are mounted on respective shafts each journaled in an eccentric sleeve in turn journaled in a housing. The sleeves are rotatable about sleeve axes which are parallel to but offset from the axes of the rolls so that rotation of these sleeves changes the rolling gap width. Each shaft carries, on its end opposite the roll, a pinion received in a ring gear journaled in the housing for rotation about a fixed axis coinciding with the axis of the respective sleeve. The gear connection to the shaft, consisting of inner gear and orbiting gear, is cantilevered to enable one to have a fixed axis while the other orbits. Each ring gear is carried on a shaft which in turn carries a gear wheel meshing with the gear wheel of the other ring-gear shaft. One ring-gear shaft is rotated to thereby drive the rolls, whose pinions orbit within the ring gears on rotation of the sleeves. A knob rotationally coupled to a worm is openable to rotate intermeshing gears formed on the sleeves through a step-down self-blocking gear train. A belleville washer frictionally engages the knob to prevent the rolls from going out of adjustment.

3,776,015
PROCESS FOR MANUFACTURING EXPANDED AND CORRUGATED HEAT EXCHANGER CORES FROM METAL STRIP MATERIAL

Andre Chartet, Meudon, France, assignor to Societe Anonyme des Usines Chausson, Asnieres, France

Division of Ser. No. 94,238, Dec. 1, 1970, Pat. No. 3,695,347.
This application Jan. 11, 1972, Ser. No. 217,045
Int. Cl. B21k *27/06*; B21d *31/04*
U.S. Cl. 72—324 8 Claims

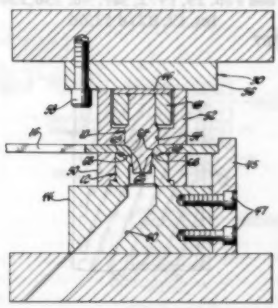


A process for producing a corrugated heat exchanger dissipator for a tube and dissipator core, comprises forming in an elongate metal sheet material a plurality of longitudinally spaced sets of longitudinally extending slots with the slots of successive sets longitudinally aligned to form a plurality of parallel straps with the straps of successive sets in alignment, bending the straps of each set and the corresponding straps of successive sets alternately in opposite directions relative to the plane of the sheet, and bending the solid areas between the sets transversely in alternate opposite directions to corrugate the sheet and interfit the straps of adjacent sets.

3,776,016
PUNCHING AND EXTRUSION DIE

Lawrence R. Quinn, Bloomfield Hills, and Max J. Bielenberg, Detroit, both of Mich., assignors to Roura Iron Works, Inc., Detroit, Mich.

Filed June 20, 1972, Ser. No. 264,652
Int. Cl. B21d *31/02*
U.S. Cl. 72—327 9 Claims



Hole forming apparatus comprising a punch having a cutting portion at its leading end for cutting and punching a hole in a metal sheet, and a forming portion following said cutting portion for shaping the material of the metal sheet sur-

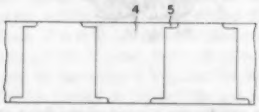
rounding the hole, the cutting portion comprises a cutter extending from the leading end of the punch and the forming portion includes a flared section providing a material deforming shoulder, a cylindrical section having a greater lateral dimension than the cutter, and an outwardly radiused section, and a die which cooperates with the punch for shaping the material of the metal sheet surrounding the hole. Also disclosed is a tooth guided rocker and platform assembly for self dumping hoppers and the like wherein the teeth of the rockers are guided into and out of holes formed by the hole forming apparatus.

3,776,017

SYSTEM FOR CONTINUOUS MANUFACTURE OF COPPER ANODES FOR ELECTRO-REFINING

Hiroshi Ikeda; Motoaki Yoneda, and Minoru Ishii, all of Iwaki, Japan, assignors to Onahama Seiren Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 17, 1972, Ser. No. 300,418
Claims priority, application Japan, Jan. 10, 1972, 47/4753
Int. Cl. B21d *28/00*
U.S. Cl. 7—338 **4 Claims**



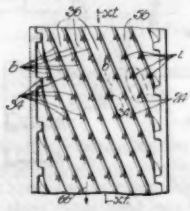
System for continuous manufacture of copper anodes for electro-refining which is constructed with a mechanism for receiving and storing continuous strip of copper plate in a loop form, a device for intermittently feeding the copper strip from the looper, while correcting fins, warps, etc. of the strip, a press to cut out a plurality of anodes in a predetermined pattern, a device to diverge such severed anodes in each designated direction, a sorting conveyor to inspect and sort out defective anodes, and a receiving and stacking device to receive and temporarily stack the sorted anodes for further handling.

3,776,018

TUBING WITH INNER BAFFLE FINS AND METHOD OF PRODUCING IT

Fred W. French, Morris, Conn., assignor to Noranda Metal Industries, Inc., Bellingham, Wash. **The portion of the terms of this patent subsequent to May 16, 1989 has been disclaimed.**

Filed Feb. 29, 1972, Ser. No. 230,220
Int. Cl. B21d *53/06*
U.S. Cl. 72—367 **12 Claims**



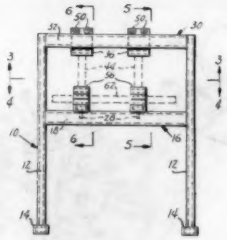
Tubing with a longitudinal axis and inner fins extending inclined to the axis and being indented to form multitudinous baffles on the fins, and a method of producing such tubing from a round inner-fin tube blank, by partially flattening the blank for interpress of opposed fins, and subsequently expanding the partially flattened blank by internal fluid pressure.

3,776,019

FRONT AXLE BEAM PRESS

Clifford D. Shaw, 8854 Oak Ave., Orangevale, Calif.

Filed Aug. 19, 1971, Ser. No. 173,309
Int. Cl. B21j *11/00*
U.S. Cl. 72—404 **1 Claim**



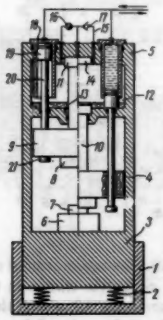
Two pairs of complementary semi-circular elements are arranged one above the other with the lower members stationary and the upper members movable vertically downwardly by any suitable type of press to straighten deformed tubular front axle beams, for example, those used on present types of Volkswagens.

3,776,020

HIGH-SPEED PRESSING MACHINE

Igor Grigorievich Fedosenko, 602 Mikroraion, 51, kv. 206; Vadim Grigorievich Kononenko, ul. Chkalova, 15, kv. 12; Anatoly Sergeevich Morgolenko, and Gennady Dmitrievich Selivanov, both of ul. Chkalova, 15, all of Kharkov, U.S.S.R.

Filed June 27, 1972, Ser. No. 266,738
Int. Cl. B21j *9/12*
U.S. Cl. 72—445 **2 Claims**



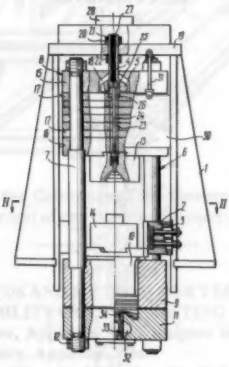
A high-speed pressing machine comprises a receiver filled with compressed gas. A piston with the piston rod at which end there is fixed a crossbeam with the working tool, and the piston moves in a central portion of the receiver space. Power cylinders are provided to return the crossbeam with the working tool to the initial position and are rigidly fixed within the receiver space. This permits cutting the time between the tool operations and raising the number of work cycles of the machine per time unit.

3,776,021

HIGH-SPEED HAMMER

Vadim Grigorievich Kononenko, ulitsa Chkalova, 15, kv. 12; Sergei Grigorievich Kushnarenko, ulitsa Chkalova, 13, kv. 7; Vyacheslav Viktorovich Kollerov, prospekt Gagarina, 38, kv. 60; Vyacheslav Dmitrievich Guly, ulitsa Sapernaya, 12a, kv. 2; Viktor Alexlevish Stelamakh, ulitsa Kirova, 18, kv. 2, all of Kharkov; Mikhail Nikitovich Fedotov, ulitsa Chaikovskogyo, 10, kv. 1, and Nikolai Nikiforovich Lysov, ulitsa Pushkina, 50, both of Stupino Moskovskoi oblasti, all of U.S.S.R.

Filed Aug. 1, 1972, Ser. No. 277,039
Int. Cl. B21j 9/18
U.S. Cl. 72—453 1 Claim



A high-speed hammer wherein the working tools secured, respectively, on the anvil block and crosshead of a frame perform a working stroke being acted upon by a power unit mounted on the frame, and are returned to the initial position by compressed gas contained in a space in the anvil block.

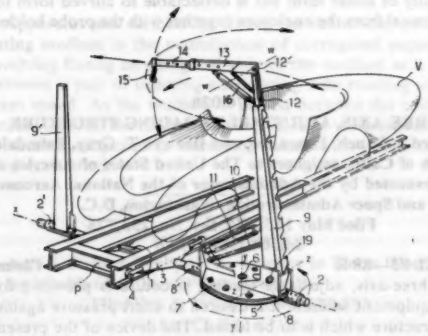
Said space accommodates a piston whose rod is adjustably connected with a bed for adjusting the position of the frame relative to said bed.

3,776,022

APPARATUS FOR ACTING OF AND RESHAPING THE DAMAGED BODYWORK OF AUTOMOBILE VEHICLES

Marini Lionello, via Villafranca, Sommacampagna, Verona, Italy

Filed July 23, 1971, Ser. No. 165,685
Int. Cl. B21d 37/12
U.S. Cl. 72—455 2 Claims



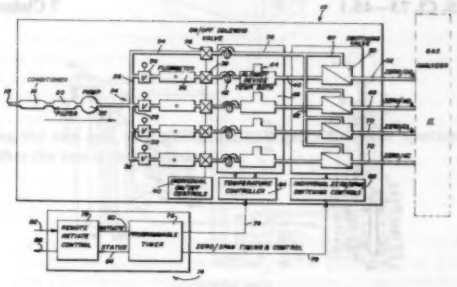
In apparatus for repairing the damaged body of an automobile there is provided an elongated bar that supports a carriage assembly which is movable relative to the damaged body of the vehicle. The elongated bar further supports a rod that is adapted to receive a tool for working on the body of the vehicle. The rod is movable about three mutually perpendicular axes in addition to being longitudinally displaceable by the carriage assembly with respect to the automobile body. Further, a portion of the rod is telescoped and hinged in order to provide additonal flexibility.

3,776,023

CALIBRATION SYSTEM FOR GAS ANALYZERS

Allan L. Budd, San Diego, Calif., and Paul E. Wilkens, Fairfax, Va., assignors to Monitor Labs Inc., San Diego, Calif.

Filed Dec. 22, 1971, Ser. No. 210,936
Int. Cl. G01n 31/00
U.S. Cl. 73—1 R 11 Claims



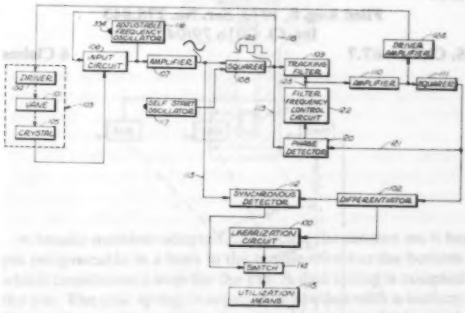
Purified air is mixed with a source gas generated by a permeation tube to form a mixture of precise concentration. The mixture is used for calibrating a gas analyzer. Solenoid actuated valves selectively furnish the analyzer with either one gas, or a plurality of gases simultaneously. Means within the invention system maintain the gases delivered to an analyzer at constant humidity and temperature to insure reproducibility of calibration results.

3,776,024

DENSITOMETER COMPONENTS

Gerald Lance Schlatter, Boulder, Colo., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed July 9, 1971, Ser. No. 161,025
Int. Cl. G01n 9/00
U.S. Cl. 73—32 10 Claims



A vibration densitometer including a vane adapted to be vibrated, a driver coil located around a magnetostrictive body to vibrate the vane, and a piezoelectric crystal to detect the vane vibrations. A loop connects the crystal to the coil, the loop having a tracking filter to pass tbe resonant frequency of

the crystal output. A linearization circuit is connected from the filter output to produce an analog voltage directly proportional to the density of the fluid in which the vane is located. A switch is actuable to clamp the circuit output to a constant magnitude to indicate the lack of resonance. The switch is actuated by a synchronous detector connected from the input and output of the tracking filter. An alternating signal is transformer coupled to an input circuit with rectification to provide an isolated source of potential without the use of a power supply.

3,776,025

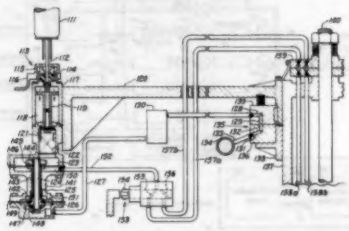
EXHAUST MACHINE LEAK DETECTOR AND SHUT OFF

Joseph J. Plescia, Euclid, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 103,564, Jan. 4, 1971, abandoned. This application Oct. 6, 1972, Ser. No. 295,645

Int. Cl. G01m *3/04*

U.S. Cl. 73—45.1 **7 Claims**



A leak detector, used in conjunction with an exhausting apparatus of a multiple head variety, which is responsive to a change in pressure in the evacuation system of the exhaust apparatus so that it terminates the evacuation process of the device when the device is leaking to the atmosphere. The leak detector apparatus is built into each head of the multiple head exhaust machine and operates with a variable reference pressure which is compared to the pressure of the evacuation system. Preferably, the reference pressure is varied throughout the process as the pressure in the evacuation system is similarly varied.

3,776,026

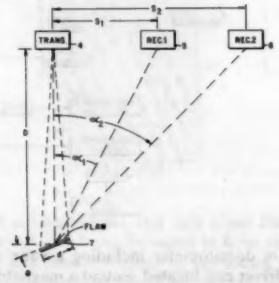
ULTRASONIC FLAW DETERMINATION BY SPECTRAL ANAYLSIS

Laszlo Adler, Knoxville, and Hubert L. Whaley, Powell, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Aug. 8, 1972, Ser. No. 278,843

Int. Cl. G01n *29/04*

U.S. Cl. 73—67.7 **6 Claims**



A method of quantitatively determining the size and orientation of flaws within a material. A broadband pulse having a frequency width of at least several MHz is used for an input pulse from an ultrasonic transducer which is directed toward the immersed test material which may contain a flaw, and the frequency interval between two consecutive frequency maxima of the reflected spectrum due to the difference in distance between each end of the flaw and a receiving transducer is relatable to both the size and orientation of the flaw.

3,776,027

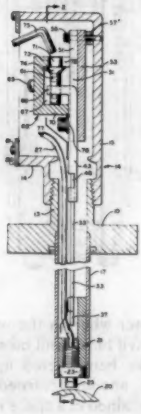
PROBE MOUNTING STRUCTURE

John M. Campbell, Jeannette, Pa., assignor to Carrier Corporation, Syracuse, N.Y.

Filed July 24, 1972, Ser. No. 274,155

Int. Cl. G01h *1/00*

U.S. Cl. 73—70 **5 Claims**



A probe support structure fixed to the machine casing includes a base member having an enclosure and a tubular member extending inwardly of the casing toward a rotating member journaled for high speed rotation in the casing. The tubular member has communication with the enclosure and a probe holder is mounted in the inner end of the tubular member for axial movement therein toward and from the rotating member. Mechanism is mounted in the enclosure and is operable to adjust the probe holder axially of the tubular member. The adjusting mechanism includes a resilient member attached to the probe holder and extending lengthwise of the tubular member. The resilient member is normally of linear form but is deflectable to curved form for withdrawal from the enclosure together with the probe holder.

3,776,028

THREE-AXIS, ADJUSTABLE LOADING STRUCTURE

Edward J. Lynch, Lancaster, and Darwyn T. Gray, Palmdale, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

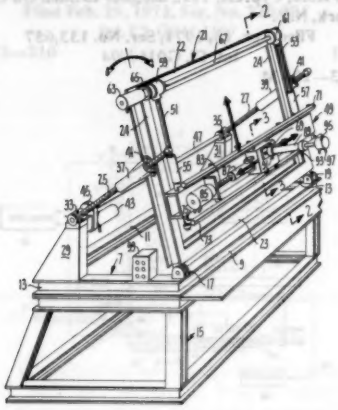
Filed May 16, 1972, Ser. No. 253,725

Int. Cl. G01n *3/00*

U.S. Cl. 73—88 R **4 Claims**

A three-axis, adjustable loading structure is provided for test equipment wherein it is desired to exert pressure against the structure which is to be tested. The device of the present invention is provided with three electric drives whereby the wall angle, horizontal position, and vertical position of the test device can be rapidly and accurately positioned.

The invention described herein was made by employees of the United States Government and may be manufactured and



used by or for the Government for Governmental purposes without the payment of any royalties thereon or therefor.

3,776,029

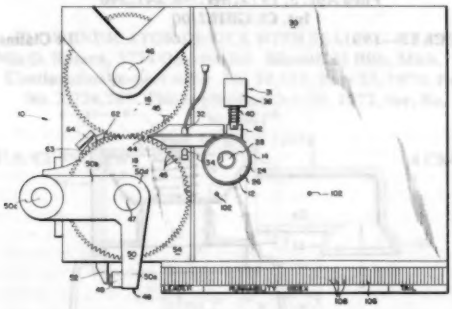
APPARATUS AND METHOD FOR TESTING THE RUNNABILITY OF CORRUGATING MEDIUM

Robert C. McKee, Appleton, Wis., assignor to The Institute of Paper Chemistry, Appleton, Wis.

Filed Dec. 10, 1971, Ser. No. 206,672

Int. Cl. G01b *5/30*

U.S. Cl. 73—88 R **11 Claims**



Apparatus and method for testing the runnability of corrugating medium in the manufacture of corrugated paperboad involving fluting an elongated strip of the medium as it is fed between a pair of coacting corrugating rolls rotating at constant speed. As the medium is passed between the rolls, the stress-strain on the medium is progressively increased and the medium is subjected to increasing stress-strain until a critical level is reached.

3,776,030

EXTENSOMETER

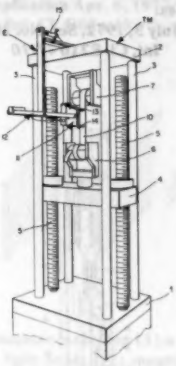
Robert S. Strimel, Penllyn, Pa., assignor to Tinius Olsen Testing Machine Co., Inc., Willow Grove, Pa.

Filed Oct. 5, 1972, Ser. No. 295,352

Int. Cl. G01n *3/06*

U.S. Cl. 73—93 **14 Claims**

An extensometer unit for detecting the strain in a specimen mounted on a universal testing machine. The strain sensor of the unit being supported by a mechanical system that can swing the sensor against the specimen and hold it in place during the test and then swing the unit away from the specimen after the test is completed.



3,776,031

TENSILE MEMBER WITH TENSION INDICATOR

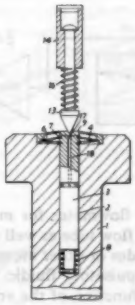
Jack Victor Haig Trigg, Odiham, England, assignor to International Engineering Concessionaries Limited, Walton-on-Thames, Surrey, England

Filed Aug. 16, 1971, Ser. No. 172,019

Claims priority, application Great Britain, Aug. 19, 1970, 39,995/70

Int. Cl. G01n *3/08*

U.S. Cl. 73—95 **8 Claims**



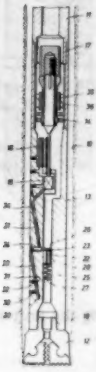
A tensile member adapted to indicate the tension on it has a pin reciprocable in a bore in the tensile member the bottom of which constitutes a stop for the pin. A disc spring is coupled to the pin. The disc spring is urged into contact with a surface of the tensile member surrounding the entrance to the bore when the pin is pressed into the bore. The disc spring becomes distorted and snaps through when the distance between the bottom of the bore and the entrance of the bore increases by a given amount as a result of elongation of the tensile member caused by tensioning it.

3,776,032

METHOD AND APPARATUS FOR DETECTING AN INFLOW OF FLUID INTO A WELL

Charles B. Vogel, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed July 3, 1972, Ser. No. 268,369
Int. Cl. E21b 47/10
U.S. Cl. 73—155 13 Claims



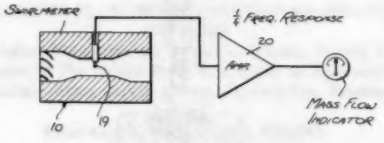
A method and apparatus for detecting an inflow of fluid into a well during rotary drilling of the well wherein an inflow of gas is detected by acoustic means and an inflow of water is detected by resistivity means, the resulting information being transmitted to the surface by means of pressure pulses produced in the drilling fluid circulated during drilling.

3,776,033

VORTEX-TYPE MASS FLOWMETERS

Peter J. Herzl, Morrisville, Pa., assignor to Fischer & Porter Company, Warminster, Pa.

Filed Mar. 6, 1972, Ser. No. 232,058
Int. Cl. G01f 1/00
U.S. Cl. 73—194 B 6 Claims



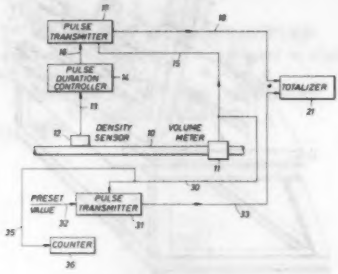
A vortex-type mass flowmeter for measuring the mass of fluid passing through a flow tube as well as the density thereof. A bluff body, swirl blades or other means disposed within the tube acts to create a pulsatory fluidic vortex therein whose frequency varies as a function of the volumetric flow rate of the fluid being measured. Placed within the flow tube is a pressure-responsive transducer adapted to generate an electrical signal whose frequency is proportional to the fluidic pulse rate and whose amplitude is a function of the kinetic energy contained in the vortex. The transducer signal is processed by an operational amplifier, the gain of which is inversely proportional to frequency, thereby effectively dividing the transducer signal by frequency throughout the operating range of the meter to yield an output signal whose amplitude is indicative of mass flow. By additionally dividing this output signal by frequency with a second amplifier having a gain which is inversely proportional to frequency, a signal indicative of the fluid density is produced.

3,776,034

METHOD FOR MEASURING FLUID FLOW IN UNITS OF MASS

Robert H. Kolb, Cypress, Tex., assignor to Shell Oil Company, New York, N.Y.

Filed Apr. 13, 1971, Ser. No. 133,657
Int. Cl. G01f 1/04
U.S. Cl. 73—194 M 2 Claims



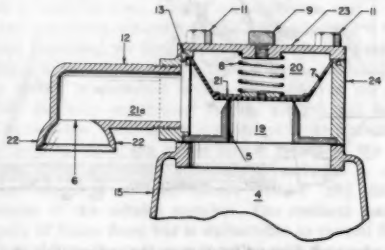
A method and apparatus for simultaneously measuring the volume and the density of a fluid stream and totalizing the product of the two measurements to provide the mass units of fluid delivered by the stream. The apparatus also includes means to accommodate zero suppression of the density measurements so that the final product is a numerical indication of the actual number of mass units delivered.

3,776,035

METER OVERPRESSURE PROTECTION DEVICE

Joseph P. Lofink, Hebron, Ohio, assignor to Universal Lancaster Corporation, Dallas, Tex.

Filed Apr. 5, 1972, Ser. No. 241,346
Int. Cl. G01f 1/00
U.S. Cl. 73—199 14 Claims



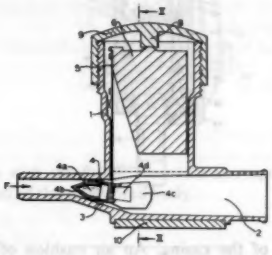
Disclosed is a gas meter-relief pressure device combination that maintains a predetermined pressure level in the meter and at a downstream combustion locus. The protection device, mounted on the gas meter itself, has: (1) an inlet orifice in communication with the interior of the gas meter; (2) a valve means normally closing the orifice; and (3) a vent, in communication with the orifice when the valve means is open. The diameter of the orifice is larger than the diameter of the gas vent. When a predetermined pressure is present in the meter, the valve begins to open and gas flows through the orifice and out the vent. Because the vent is smaller in diameter than the orifice, discharging gas builds up a back pressure that ultimately acts in tandem with the meter pressure to open the valve further than it would otherwise be opened if only the original meter gas pressure at the discharge end of the orifice was acting upon the valve.

3,776,036

FLUID FLOWMETERS

Lionel Ivor Alfred Taylor, Copythorne House, Copythorne, Southampton, England

Filed Feb. 29, 1972, Ser. No. 230,381
Int. Cl. G01f 1/00
U.S. Cl. 73—210 11 Claims



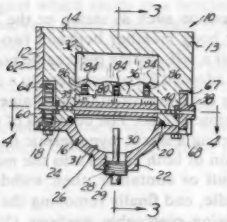
A fluid flowmeter for converting a fluid flow into an electrical output signal, includes a float which is moved by the fluid flow against the actio of a spring, to vary the amount of light transmitted for a light source to a photosensitive device. The flowmeter is primarily for use in a miles-per-gallon meter for an automobile, the output signal from the flowmeter being processed with a signal indicative of the speed of an automobile to provide a miles-per-gallon indication.

3,776,037

FLOW INDICATOR DEVICE WITH SEALING MEANS

Nils O. Rosaen, 3774 Quarton Rd., Bloomfield Hills, Mich.

Continuation-in-part of Ser. No. 50,651, June 29, 1970, Pat. No. 3,724,269. This application Oct. 30, 1972, Ser. No. 301,861
Int. Cl. G01f 1/00
U.S. Cl. 73—228 4 Claims



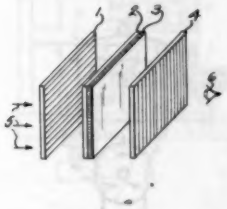
A flow indicator device having a housing with inlet and outlet ports respectively adapted to be connected with a source of fluid pressure and a fluid user. A semi-circular vane member mounted within the housing is movable in response to a change in the flow rate between the inlet and outlet ports to rotate a shaft to which the vane member is attached. The shaft, in turn, extends externally of the housing and is operatively coupled to an indicator for providing an external visual indication of the rate of flow through the device. A spring balanced seal is provided between the vane member and an internal wall of the housing separating the inlet and the outlet.

3,776,038

VISUAL-TYPE HYGROMETER

Stanley B. Elliott, 7125 Conelly Blvd., Bedford, Ohio

Continuation-in-part of Ser. No. 18,921, March 12, 1970, abandoned. This application Apr. 6, 1972, Ser. No. 241,573
Int. Cl. G01n 19/10
U.S. Cl. 73—335 49 Claims



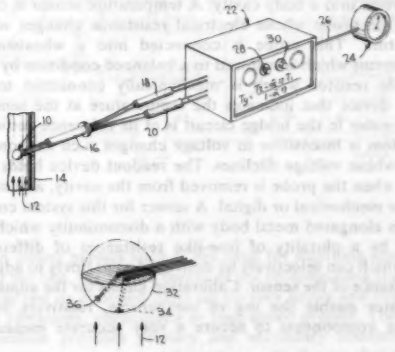
A visual type hygrometer including (1) a source of illumination that provides a light beam, (2) means for providing observable changes in relative humidity which is a chemical composition such as the sodium salt of 1,1' binaphthyl 8-8' dicarboxylic acid that of itself senses changes in relative humidity by being abruptly triggered at a predetermined relative humidity, and (3) light detecting means for detecting observable changes in the brightness and intensity of the light coming from the composition when the light beam contacts the composition.

3,776,039

APPARATUS AND METHOD FOR DETERMINING THE TEMPERATURE OF A FLOWING GAS

Mack D. Bowen, Smyrna, Ga., assignor to Tech-Air Corporation, Albany, Ga.

Filed Nov. 30, 1970, Ser. No. 93,719
Int. Cl. G01k 13/02, 1/16, 7/14
U.S. Cl. 73—341 7 Claims



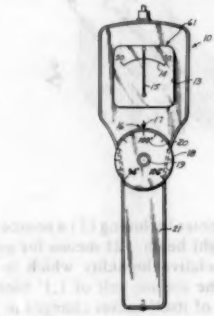
Apparatus for determining the temperature of a flowing gas including a first thermocouple disposed on the surface of a probe at the stagnation point, a second thermocouple disposed on the surface of the probe at a position spaced from the stagnation point, and equipment for calculating the actual temperature of the flowing gas from the temperatures sensed by the thermocouples independent of convective heat transfer and emmissivity of the probe.

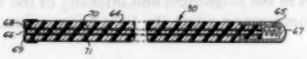
3,776,040

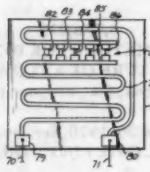
ELECTRICAL THERMOMETER SYSTEM AND SENSOR THEREFOR

Edson B. Gould, III, Newport Beach, Calif., assignor to Robert V. Gibson and Thurston H. Ross, Jr., Los Angeles, Calif., part interest to each

Filed Sept. 30, 1971, Ser. No. 185,280
Int. Cl. G01k 7/20; H01c 3/00
U.S. Cl. 73—362 AR **12 Claims**







An electrical clinical thermometer system including a probe for insertion into a body cavity. A temperature sensor is carried by the probe whose electrical resistance changes with temperature. This probe is connected into a wheatstone bridge circuit which is restored to a balanced condition by an adjustable resistor which is mechanically connected to a readout device that indicates the temperature at the sensor when a meter in the bridge circuit is at its reference setting. The system is insensitive to voltage changes such as from a battery whose voltage declines. The readout device holds its reading when the probe is removed from the cavity, and may be either mechanical or digital. A sensor for this system comprises an elongated metal body with a discontinuity which is bridged by a plurality of fuse-like resistances of different values which can selectively be destroyed so as finely to adjust the resistance of the sensor. Calibration means for the adjustable resistor enable the use of inexpensive, relatively low-tolerance components to secure a very accurate measurement.

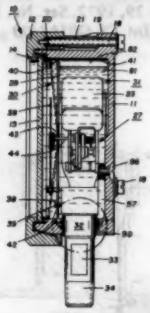
3,776,041

OIL FILLED PRESSURE GAUGE

Richard H. Wetterhorn, Fairfield, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed June 18, 1971, Ser. No. 154,539
Int. Cl. G01l 7/04
U.S. Cl. 73—414 **14 Claims**

An oil receptive casing of a pressure gauge affording improvements for oil fill. Improvements include complete oil coverage over the dial face for undistorted readability and uninterrupted pointer dampening. A gasket seal construction at the casing and Bourdon tube socket joint maintains leak-



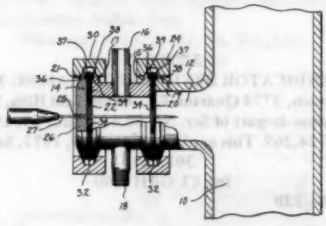
tight reliability of the casing. An air cushion of controlled volume readily trapped behind the dial face, receives a removably secured safety plug enabling atmospheric venting in event of excessive internal overpressure.

3,776,042

ASEPTIC SAMPLER FITTING

Bruno H. Werra, Waukesha, Wis., and Patrick J. Duffy, Winchester, Mass., assignors to Ladish Co., Cudahy, Wis.

Filed Mar. 22, 1972, Ser. No. 237,055
Int. Cl. G01n 1/12
U.S. Cl. 73—421 B **16 Claims**



An aseptic medium such as steam or the like is contained within a tubular body member between two opposing covers each of which has a self-closing pierceable portion. Th tubular body member is adapted for attachment to a container or conduit for sampling the contents of the container or conduit with a sterile hypodermic needle. The contents of the container are sampled by inserting a sterile hypodermic needle through the pierceable portion of both covers into the material contained within the conduit or container, then withdrawing a sample through the needle, and finally removing the needle, whereupon the self-closing pierceable portions close and seal the body member again. The pierceable covers also serve as gaskets.

3,776,043

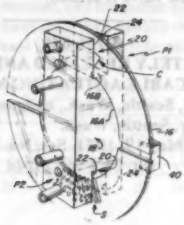
FLUIDIC ANGULAR DISPLACEMENT SENSOR

Horace B. Welk, Jr., Churchville, Pa., assignor to Casco Products Corporation, Bridgeport, Conn.

Filed Mar. 31, 1972, Ser. No. 240,153
Int. Cl. G01p 3/26; G01b 13/18
U.S. Cl. 73—490 **5 Claims**

Fluidic sensor arrangement for monitoring amount of and incremental frequency of angular displacement includes

fluidic interruptable output signals and a corresponding pair of fluidic barrier sets arranged to move in unison in interruptable relation with the fluidic elements in response to angular displacement of the monitored body.



3,776,044

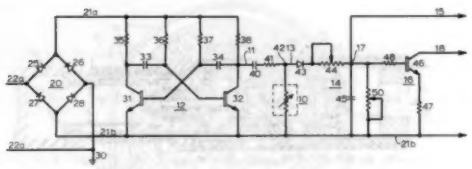
ELECTRONIC ACCELEROMETER SYSTEM

Ronald L. Syria, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Jan. 6, 1972, Ser. No. 215,862

Int. Cl. G01p *15/12*

U.S. Cl. 73—516 LM **9 Claims**



To measure acceleration of a vehicle or other moving unit, a system installed in the vehicle includes an electrolytic gravity sensor coupled with at least one other component in a voltage divider arrangement. An a-c signal generator develops a signal across the voltage divider arrangement, so that the gravity sensor provides a signal which varies as a function of vehicle acceleration. This varying signal is rectified, integrated and utilized as an analog voltage signal representing the actual deceleration. The system includes a further stage for providing a variable resistance or analog current signal output. A polarity reversal protector is coupled to the input stage so that the electronic components of the system will not be damaged by connection to vehicle batteries of different polarity arrangements.

3,776,045

TOOL DRIVING UNIT

Frederick Arthur Faulkner, High Easter, England, assignor to Faulkner Engineering Limited, Waltham Abbey, Essex, England

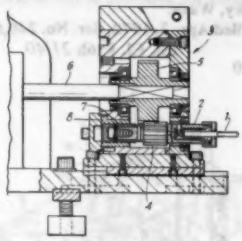
Filed Mar. 15, 1972, Ser. No. 234,883

Claims priority, application Great Britain, Oct. 21, 1970, 49,064/70

Int. Cl. F16h *21/00*

U.S. Cl. 74—20 **3 Claims**

A unit for driving a tool, comprising a tool carrier supported for rotational and translational movement, first means for transmitting rotational drive to the carrier along a main power path, and second means branch-connected with this main power path and arranged to impress translational movement on the carrier upon flow of rotational drive along the main power path.



3,776,046

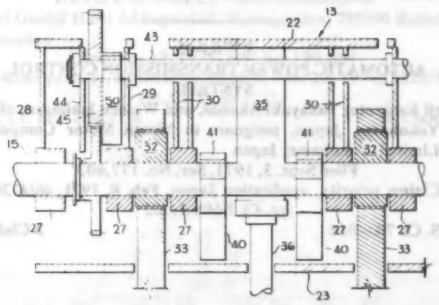
INERTIA BALANCING MEANS FOR POWER PRESSES

Clarence O. Jones, Jr., Eggertsville, N.Y., assignor to Niagara Machine & Tool Works, Buffalo, N.Y.

Filed Sept. 27, 1971, Ser. No. 184,040

Int. Cl. F16h *21/18*

U.S. Cl. 74—50 **4 Claims**

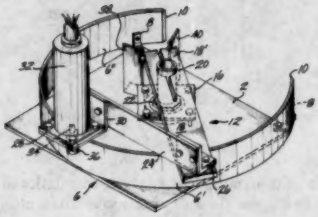


In power presses such as are used for stamping sheet metal and the like, the inertia forces of the reciprocating slide of the press and its attached parts set up very heavy and objectionable vibrations, particularly in high speed presses. The present invention provides primary and secondary counterweights. The primary counterweights rotate with the crankshaft or eccentric shaft of the press but with the center of gravity of the counterweight moving in a direction opposite to the direction of movement of the slide to neutralize at least a portion of the inertia forces of the slide and its connected parts. The secondary counterweight rotates opposite to the first counterweight but with its center of gravity moving in the same direction with respect to the vertical, so that the second counterweight has a cumulative effect with respect to the primary counterweight in neutralizing vertical inertia forces but has a subtractive effect with respect to lateral inertia forces produced by rotation of the primary counterweight.

3,776,047
MEANS FOR OSCILLATING ONE OF A PAIR OF RELATIVELY ROTATABLE MEMBERS

Howard E. Rothenbuhler, Acme; Robert C. Melder, Sedro Woolley, and John Lawrence Cotter, Mt. Vernon, all of Wash., assignors to Rothenbuhler Engineering Company, Sedro Woolley, Wash.

Filed Apr. 3, 1972, Ser. No. 240,647
Int. Cl. F16h *21/40*
U.S. Cl. 74—70 **24 Claims**

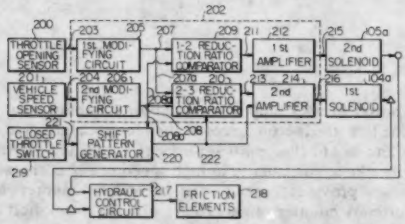


One of the members has a track raised thereon which is equipped with arcuate surfaces on opposite sides thereof, that are concentric with the rotational axis of the members, and joined to one another at the corresponding ends thereof. The other member extends transversely of the track between the aforesaid opposite sides thereof, and has a wheel rotatably carried threreon, the rotational axis of which is parallel to the axis of the members but transversely shiftable in relation thereto. The wheel is yieldably biased into engagement with the surface of the track, on each side thereof, and the members are rotated in relation to one another by driving the wheel in one rotational direction thereof, so as to cause either the wheel or the track to undergo rotation about the axis of the members, there being yieldable biasing means for retaining the wheel in engagement with the track as it crosses the junctures between the surfaces at their ends.

3,776,048
AUTOMATIC POWER TRANSMISSION CONTROL SYSTEM

Koji Enomoto; Takayuki Akaishi, and Wataru Ishimaru, all of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Sept. 3, 1971, Ser. No. 177,603
Claims priority, application Japan, Feb. 8, 1971, 46/4730
Int. Cl. B60k *21/02*
U.S. Cl. 74—866 **3 Claims**

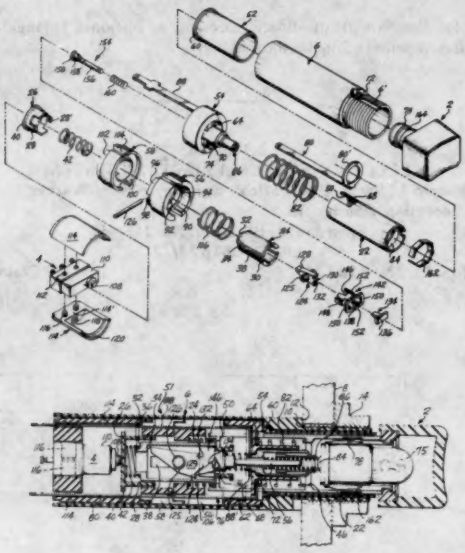


An automatic power transmission control system for a vehicle driven by an engine having a carburetor throttle valve which control system comprises a shift control unit to cause shifting of different gear reduction ratios in accordance with a signal representative of an effective opening area of the throttle valve and a signal representative of a vehicle speed, and a shift pattern generator circuit associated with the shift control unit and responsive to a signal representing a closed condition of the throttle valve for modifying the shift pattern whereby a downshift is effected from a lower gear reduction ratio to a higher gear reduction ratio regardless of the vehicle speed to provide sufficient engine braking action when the closed condition of the throttle valve is sensed.

3,776,049
ALTERNATELY RELEASED AND DETAINED RECIPROCABLE ACTUATING MECHANISM

William B. Emery, Seattle, Wash., assignor to Korry Manufacturing Company, Seattle, Wash.

Filed May 19, 1971, Ser. No. 144,825
Int. Cl. F16h *21/44*
U.S. Cl. 74—110 **27 Claims**



The mechanism comprises a pair of relatively reciprocable operating members, one of which is reciprocable in a course of translation, and the other of which is reciprocable about an axis crosswise of said course; and reciprocable latch means which are engageable and disengageable with and from the one operating member at a predetermined juncture in the course thereof. The mechanism also comprises first operating means which are responsive to reciprocation of the one operating member on one side of said juncture, to reciprocate the other operating member between points on opposite sides of said course, and second operating means which are responsive to successive reciprocation of the one operating member on the other side of said juncture, when the other operating member is reciprocated between said points, to cause the latch means to alternately latch and unlatch the one operating member against reciprocation on the one side of said juncture.

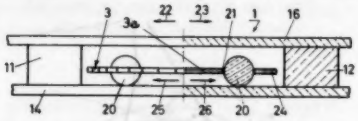
3,776,050
MOTION TRANSFORMER

Max Hetzel, Bienne, Switzerland, assignor to Omega Louis Brandt Et Freres, S.A., Bienne, Switzerland

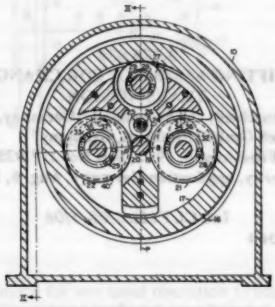
Filed May 25, 1972, Ser. No. 256,994
Claims priority, application Switzerland, June 14, 1971, 8622/71
Int. Cl. F16h *27/02*
U.S. Cl. 74—142 **6 Claims**

In a motion transformer for converting oscillatory to rotary motion, comprising (a) an enclosure including a base plate

and a cover plate, (b) a ratchet wheel structure within the enclosure mounted for both oscillatory and rotary motion, (c) a pair of stops limiting the amplitude of such oscillatory motion, (d) a ratchet pawl and a restraining member coacting with the ratchet wheel to convert oscillatory motion thereof to unidirectional rotary motion, (e) magnetic coupling means attracting the ratchet wheel structure toward the enclosure base member, and (f) at least three and preferably four hard support members for supporting the ratchet wheel in spaced relation with the base plate, the support members, which preferably are of jewel stone or equivalent hard material, are balls firmly secured as by a press fit in openings symetrically disposed adjacent the periphery of the ratchet wheel structure. The magnetic coupling may be provided by magnetizing the ratchet wheel structure, preferably with four symetrically spaced poles coinciding substantially with the ball support members.



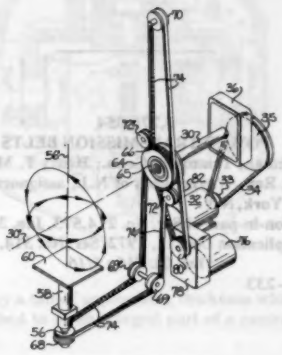
3,776,051
ROTARY MOTION TRANSMITTING DEVICE
Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc.
Filed July 7, 1972, Ser. No. 269,531
Int. Cl. F16h *13/14*
U.S. Cl. 74—208 **13 Claims**



A rotary motion transmitting device including traction rollers for the transmission of motion from an input to an output shaft. One of the shafts carries a traction ring and the other shaft whose axis is parallel to, but spaced from, the axis of the one shaft has an end portion extending into the traction ring, so that between the traction ring and the end portion of said one shaft an annular space is formed in which traction rollers are disposed which are forced into firm engagement with the traction ring and the end portion of the other shaft by the torque transmitted through the device.

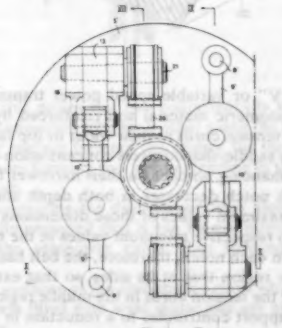
3,776,052
APPARATUS FOR MOLDING HOLLOW PLASTIC ARTICLES
Robert L. Campbell, Jr., Hickory, N.C., assignor to Automated Manufacturing Systems, Inc., Hickory, N.C.
Continuation-in-part of Ser. No. 108,416, Jan. 21, 1971, Pat. No. 3,683,416. This application Aug. 3, 1972, Ser. No. 277,914
Int. Cl. F16h *55/22, 1/28*
U.S. Cl. 74—230.17 A **11 Claims**

An apparatus for rotating a hollow mold about a pair of mutually perpendicular axes to cast a hollow plastic article. The apparatus includes a rotatable shaft defining a first axis and which carries an L-shaped bracket at one end, with one leg of the bracket extending radially from the shaft and the second leg extending generally parallel to the shaft. A mold support member is connected to the second leg and is rotatable about a second axis which perpendicularly intersects the axis of the shaft. A first electric motor is provided for rotating the shaft,



bracket, and thus a supported mold about the shaft axis, and a second electric motor independently rotates the mold about the second axis. The interconnection between the shaft and bracket is radially adjustable such that the center of the mold can be positioned at or closely adjacent the intersection of the two axes to thereby permit an essentially balanced rotation of the bracket and mold about the first axis of the apparatus.

3,776,053
DEVICE IN V-BELT TRANSMISSIONS
Carl Gustaf Hard Af Segerstad, Karasgarden, 795000 Rattvik, Sweden
Filed Oct. 19, 1971, Ser. No. 190,554
Claims priority, application Sweden, Feb. 22, 1971, 2228/71
Int. Cl. F16h *55/52*
U.S. Cl. 74—230.17 E **10 Claims**



The present invention relates to V-belt transmission devices, comprising at least one driving V-belt pulley and one driven V-belt pulley for variation of the exchange ratio in dependence upon the speed or number of revolutions per time unit, wherein the driving pulley comprises a first body which is

axially movable along the shaft of the driving V-belt pulley to and fro a second body which is fixed on the shaft, and wherein the first mentioned body is in connection with the second body through one or more members sensible to the centrifugal force and adapted to adjust the axial distance between the said body in dependence upon the magnitude of the centrifugal force, the driven V-belt pulley being composed by two V-belt pulley sheave halves which by springs are urged in direction towards each other.

3,776,054

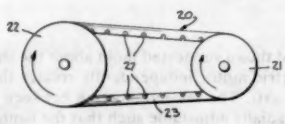
POWER TRANSMISSION BELTS

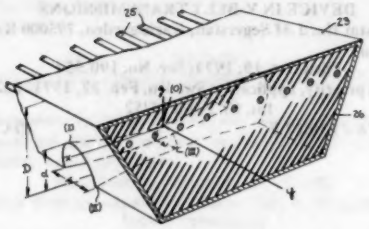
Daniel Shichman, Trumbull, Conn.; Henry F. Miller, Clifton, and Nann Ren, Wayne, both of N.J., assignors to Uniroyal, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 214,573, Jan. 3, 1972. This application Dec. 11, 1972, Ser. No. 314,247

Int. Cl. F16g *5/16*

U.S. Cl. 74—233 **16 Claims**





Molded "V" or variable speed power transmission belts, made of elastomeric material and reinforced by an array of longitudinal tension cords at their wider or top faces, and having generally saddle-shaped stress concentration-reducing and flexibility-enhancing notches on their narrower faces, are disclosed. Each notch decreases in both depth and width from respective maximum values of those dimensions at the lateral belt edges to respective minimum values in the middle region of the belt. In each notch, therefore, the belt has more rubber in its middle region that at its sides, so that extra support is provided for the tension cords in the middle region of the belt. The extra support contributes to a reduction in the deviation of the strain ratio between the center tension cord and the laterally outermost tension cords from unity when the belt is running, and thereby minimizes "dishing" of the belt in a transverse direction. Belts having notches of the disclosed saddle-shaped configuration thus are characterized by longer service life and/or higher horsepower capacity. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,776,055

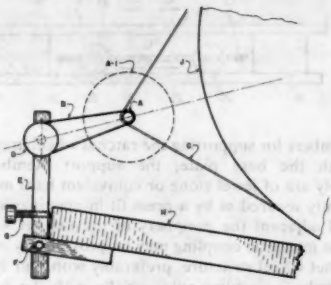
SPINNING WHEEL

Jules Kliot, 2150 Stuart St., Berkeley, Calif.

Filed May 19, 1972, Ser. No. 255,132

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.15 R **5 Claims**



A unique arrangement of the spindle head of a spinning wheel which permits insertion and removal of a straight spindle as well as a drop spindle, i.e., a spindle with an attached whorl.

3,776,056

GEAR SHIFTING ASSEMBLY FOR CHANGE-SPEED TRANSMISSION

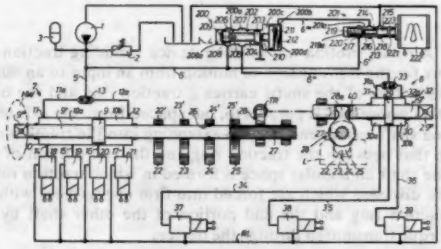
Helmut Espenschied, Ludwigsburg, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Aug. 4, 1972, Ser. No. 277,928

Claims priority, application Germany, Aug. 6, 1971, P 21 39 346.4

Int. Cl. F16h *3/08, 5/06*

U.S. Cl. 74—364 **10 Claims**



A gear shifting assembly for changing the speed positions of transmissions in automotive vehicles has a double-acting gear shifting cylinder receiving oil by way of a directional control valve which is actuatable by oil in dependency on a pressure differential between the cylinder chambers. The directional control valve receives oil from a pump by way of an adapter valve which is controlled by an adjustable pressure regulating valve. The pressure of oil which moves the piston in the double-acting cylinder depends on the selected speed position of transmission and such pressure develops when the piston encounters a resistance to its movement in the cylinder.

3,776,057

CONTROL DEVICE FOR ONE-HAND OPERATION

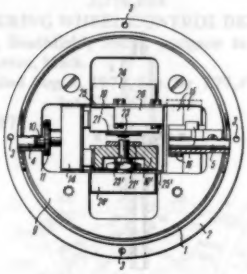
Jorg Haas, Neureut, Germany, assignor to Bruker-Physik AG, Karlsruhe-Forchheim, Germany

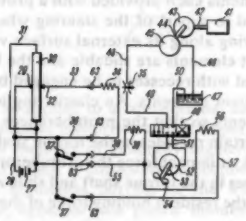
Filed Jan. 19, 1972, Ser. No. 219,031

Claims priority, application Germany, Nov. 6, 1971, P 21 55 190.6

Int. Cl. G05g 9/00

U.S. Cl. 74—471 19 Claims





A control device for one hand operation to control propulsion units of a submarine craft. A pivotally mounted spherical support member adjusts by its pivotal movement several control members to influence the speed and sense of rotation of a main propeller assembly. A pair of control elements pivotally supported at the spherical support member adjust by their pivotal movement other control members and influence speed and sense rotation of additional propeller assemblies.

3,776,058

MULTI-AXIS HAND CONTROLLER

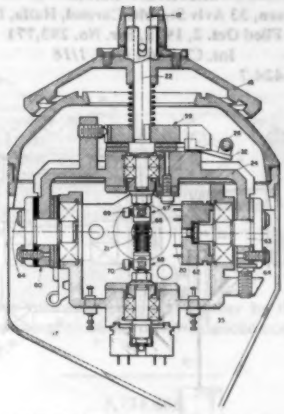
Dana French, Belmont, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1972, Ser. No. 254,126

Int. Cl. G05g 9/04

U.S. Cl. 74—471 XY 16 Claims

A precision mechanical centering device is provided in which a single spring controls the return of two oppositely formed spring plates to a positive stop in each of the three axes of motion. Null adjustment is made by separating the tines of a tuning fork mounted on the same axis as each pair of spring plates until the tines contact the end surface of the spring plates. These end surfaces are positioned apart and prevented from closing by a tab of appreciable thickness which is either securely attached to or an integral part of a centrally located ground block.



3,776,059

WELDED CABLE PULLEY

Rudi Habermann, Kirchstrasse 58, D-4006 Erkrath near Duesseldorf, Germany

Filed May 9, 1972, Ser. No. 251,714

Int. Cl. F16h 55/36

U.S. Cl. 74—230.5 4 Claims

A welded cable pulley has two concentrically kinked disc-shaped rings, connected with each other along the kinking line with the outer surface forming the groove for the cable, and the inner surfaces forming two webs extending in the direction of the pulley hub.

The weld connecting the disc-shaped rings along the kinking line is so dimensioned that it can be machined to suit the diameter of the respective cable, thus forming the cable groove.

The kinked surfaces of the disc-shaped rings which form the cable groove are filled with weld metal and are given an outward curvature.

The connection between the disc-shaped rings along the kinking line is effected by weld metal adapted to the strength of the cable pulley material. For the information of the cable groove and to provide the necessary machining allowance a weld metal is used which is adapted to the strength of the cable groove, and which is homogenously connected with the basic weld.

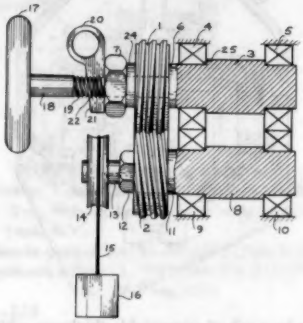
The outer edges of the disc-shaped rings are given an outward curvature.

3,776,060

QUICK-RELEASE MECHANISM FOR SELF-LOCKING MATING WORMS

David W. Pessen, 33 Aviv St., Mt. Carmel, Haifa, Israel

Filed Oct. 2, 1972, Ser. No. 293,771
Int. Cl. F16h *1/08, 1/18*
U.S. Cl. 74—424.7 5 Claims



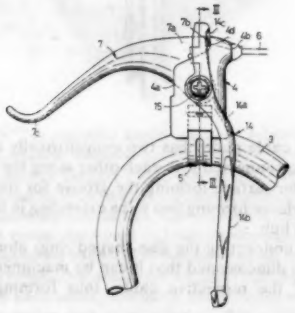
The invention is a modification of a self-locking mating worm drive, such as the drives described in U.S. Pat. Nos. 2,973,660 and 3,343,426. The modification consists of a nut mounted on one of the worm shafts with a very large pitch angle, such that it is not self-locking. This nut keeps the two worms in mesh, and axial motion of the nut is prevented by a tapered key. When this key is removed, the axial pressure of the worm pushes the nut sideways, until the two worms disengage. The self-locking property of the worm drive can thus be removed at will.

3,776,061

BRAKE APPARATUS FOR BICYCLE

Yoshigai, Kiyokazu, Osaka, Japan, assignor to Yoshigai Kikai Kinzoku Co., Ltd., Osaka, Japan

Filed Nov. 15, 1972, Ser. No. 306,906
Claims priority, application Japan, June 14, 1972, 47/71138
Int. Cl. B62k *23/06;* B62l *3/02*
U.S. Cl. 74—480 R 2 Claims



A brake apparatus for bicycle having a drop handle including a straight bar portion and bent bar portions to be mounted on the bent bar portion. The apparatus comprises a clip band for embracing the bent bar portion, a mounting bracket having an opening, a brake lever having a head inserted into the bracket from the opening and connected to one end of an actuating wire, and an auxiliary lever mounted on the inner side wall of the bracket and having portions extending in an L-form in parallel to the bent bar portion and straight bar portion respectively, with a coupling piece formed in the head of the auxiliary lever.

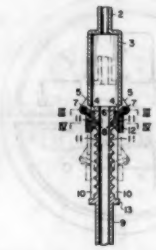
Also disclosed are technique for pivotally supporting and assembling the bracket, brake lever and auxiliary lever by a lever pin and a fastening screw and a device for retaining the fastening screw in the lever pin against loosening.

3,776,062

SHOCK ABSORBING STEERING SHAFT ASSEMBLY

Kiyoji Ito, 8, Nisshin-cho, 2-chome, Kawasaki, Japan

Filed Apr. 19, 1972, Ser. No. 245,553
Int. Cl. B62d *1/18;* G05g *5/06*
U.S. Cl. 74—492 9 Claims



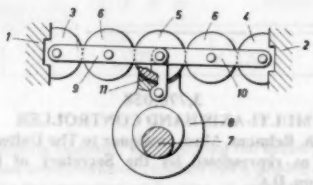
A shock absorbing steering wheel assembly having a plurality of detent elements each provided with a proturberance and pivotally secured to a part of the steering wheel shaft and a torque shaft having along its external surface vertical slots in which the detent elements are slidable and the bottom wall of such slots formed with recesses to be engaged by the protuberances of the detent elements. An elastic ring is fitted around the detent elements so that the protuberances are elastically engaged with certain recesses in the torque shaft. In the event of a strong shock or impact force the protuberances are forced out of the recesses in the torque shaft and slide along the vertical slots against the resident holding force of the elastic ring.

3,776,063

ARRANGEMENT FOR FORCING TWO ABUTMENTS APART

Gustav Scherb, Linz; Norbert Auer, Traun; Horst Obereder, Oftering, and Nikolaus Stollmayer, Hart, all of Austria, assignors to Vereinigte Osterreichische Eisen-und Stahlwerke Aktiengesellschaft, Linz, Austria

Filed Feb. 8, 1972, Ser. No. 224,575
Claims priority, application Austria, Feb. 26, 1971, 1645/71
Int. Cl. G05g *1/04*
U.S. Cl. 74—520 8 Claims



Two abutments are adapted to approach each other and to be forced apart in a predetermined direction. Each of said abutments has a confronting surface, which faces the other abutment. An arrangement for forcing said abutments apart comprises two outer rolling elements, each of which is rigidly connected to one of said abutments at said confronting sur-

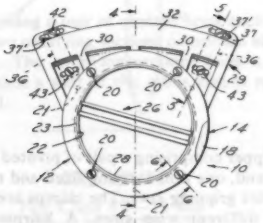
face thereof and extends transversely to said predetermined direction, a central rolling element which is movable transversely to its axis and to said predetermined direction, two intermediate rolling elements, each of which connects one of said outer rolling elements to said central rolling element, and drive means operable to displace said central rolling element transversely to its axis and to said predetermined direction. All said rolling elements have parallel axes. The arrangement is such that any two adjacent ones of said rolling elements roll one on the other in response to a displacement of said central rolling element.

3,776,064

STEERING WHEEL CONTROL DEVICE

Jack B. Rose, Southfield, Mich., assignor to Rowin, Incorporated, Warren, Mich.

Filed Aug. 2, 1972, Ser. No. 277,479
Int. Cl. B62d *1/06*
U.S. Cl. 74—557 **4 Claims**



The device, as applied to a conventional automobile steering wheel, essentially comprises a rigid upper molded plastic mounting plate member of generally segmental outline at a portion thereof which is contoured in section to nest over a corresponding segmental portion of the wheel facing the driver; a lower, opposite side plastic member mated to the upper at generally circular portions of said members, which portions are fixedly screw-secured together; and a hand grip member of the same plastic material which is cross sectioned to afford a circular, radially outward guide rib. This rib fits for rotative running action in a circular, radially internal guide groove defined between annular shoulders of the respective mated upper and lower members. The hand grip member provides a diametral cross bar to be grasped by the driver; and the assembly of members and grip has means to rigidly apply it to the steering wheel, in the form of a pair of like, arcuately spaced and semi-circular clamp straps applied in encircling relation to the wheel cross section and tightly screw-connected to the upper mounting plate member. Plate, grip and strap components of the device are of a glass-filled mylon plastic composition requiring no lubrication for a free running action of its hand grip in the guide way afforded by the two plate members.

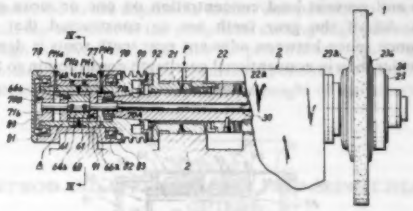
3,776,065

AUTOMATIC BALANCING APPARATUS FOR A ROTATING BODY

Kunihiko Unno, Kariya, and Kazuhiro Sugita, Anjo, both of Japan, assignors to Toyoda Koki Kabushiki Kaisha, Aichi-ken, Japan

Filed Sept. 14, 1972, Ser. No. 289,123
Claims priority, application Japan, Sept. 14, 1971, 46/71576
Int. Cl. F16f *15/10*
U.S. Cl. 74—573 **6 Claims**

An automatic balancing apparatus for a rotating body in a machine tool such as, for example, a grinding machine, having two co-axial operating shafts disposed within a spindle which are axially and rotatably movable by a pressure differential in a fluid bearing, due to the existence of an unbalanced condition in the rotating body. A pair of balancing pieces are moved



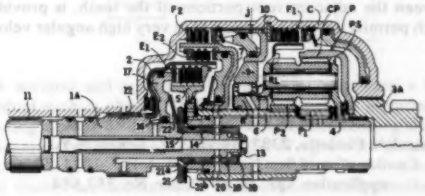
at right angles with respect to each other by the operating shafts so as to compensate for the unbalanced condition in the rotating body.

3,776,066

AUTOMATIC TRANSMISSIONS

Jean Piret, Bougival, France, assignor to Automobiles Peugeot, Paris and Regie Nationale Des Usines Renault, Billancourt, both of France

Filed Nov. 22, 1971, Ser. No. 200,985
Claims priority, application France, Dec. 2, 1970, 7043298
Int. Cl. F16h *57/10*
U.S. Cl. 74—763 **10 Claims**



Automatic transmission having an input shaft and output shaft which may be disposed on the same side or opposite sides of the transmission. A planetary gearset has its ring gear, two coaxial sun gears and a planetary gear carrier respectively integral with the output shaft, a brake mechanism and a clutch mechanism the selective actuation of which determines the engagement of the suitable transmission ratio. An inner shaft portion and an outer shaft portion are coaxial and relatively rotatable. The inner shaft portion is integral with a hub of the first clutch mechanism and the first sun gear and the outer shaft portion is integral with a drum of the second clutch mechanism and the second sun gear. Means are provided for respectively affording in both types of transmission, a bearing between the input shaft and the end of the inner shaft portion opposed to the first sun gear end thereof, and an axial abutment for resiliently yieldable return means for the first clutch mechanism and an axial abutment for the two shaft portions.

3,776,067

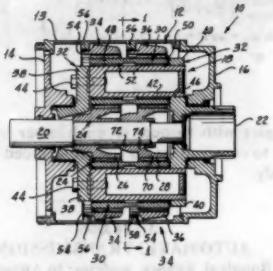
PLANETARY GEAR TRANSMISSION

Neil A. DeBruyne, Little Falls, and Henry H. Ryffel, Allendale, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Sept. 19, 1972, Ser. No. 290,414
Int. Cl. F16h *1/36*
U.S. Cl. 74—801 **17 Claims**

The planetary gear-speed reduction transmission comprises a housing and a planetary gear train in the housing intercon-

necting an input shaft and an output shaft. The sun gears and ring gears are of cantilever construction so that the teeth of the sun and ring gears can deflect in response to the twisting of the planetary gears and their carrier under torsional loads and thereby maintain substantial line contact between the meshing teeth and prevent load concentration on one or more gear teeth. All of the gear teeth are so constructed that the clearance space between adjacent gear teeth roots is deeper and wider than in conventional gear teeth construction so that



the gear teeth have increased resiliency. To provide further flexibility in the assembly, the ring gear may be connected to the housing in such a manner that it is held against axial movement but allowed limited radial movement relative to the housing. Also, a lubricant cooling means, cooperating with gear teeth formed with the relatively large clearance spaces between the adjacent root portions of the teeth, is provided which permits the gears to operate at very high angular velocities.

3,776,068

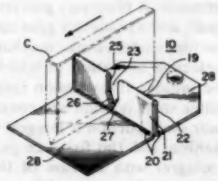
DRESSMAKER CHALK SHARPENER

Immacolata Pisciotta, 2387 Morris Ave., Bronx, N.Y.

Continuation of Ser. No. 160,325, July 7, 1971. This application Apr. 19, 1973, Ser. No. 352,684

Int. Cl. B21k *5/12*; **B26b** *23/00*

U.S. Cl. 76—82 **10 Claims**



A device for sharpening a tailor's chalk is formed from a unitary sheet having a longitudinal medial slot terminating at one or both ends in side edges converging to a sharp apex and includes a flat horizontal base panel and a first vertical panel between the ends of the base panel and a second panel extending between the top of the first panel and either the bottom of the first panel or an end edge of the base panel. The first panel has a vertical slot extending from its top edge and terminating in side edges terminating in an apex at the base panel. The second panel is either flat and superimposed on and similar to the first panel or an inclined slotted panel extending between the first panel top edge and the base panel and edge or of angular configuration including a horizontal slotted top section and a vertical end section joining the base panel and edge.

3,776,069

WIRE STRIPPER

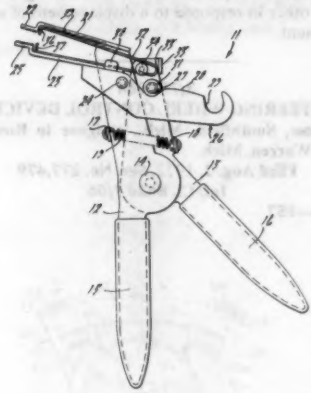
Lucien Mugnier, Nice, France, assignor to Utica Tool Company, Inc., Orangeburg, S.C.

Filed Jan. 5, 1972, Ser. No. 215,501

Claims priority, application France, Jan. 6, 1971, 7101042

Int. Cl. H02g *1/12*

U.S. Cl. 81—9.5 A **14 Claims**



A wire stripper comprising a pair of pivoted arms with hand grips at one end, one arm carrying fixed and movable clamps with outer wire gripping jaws. The clamps are resilient to accommodate different wire sizes. A hairpin-shaped spring between the clamps carries a pair of stripping knives. A cam connected to the movable clamp is actuated by the first stage of hand grip squeezing movement to close the jaws and knives, the second stage of squeezing movement retracting the knives to strip the insulation from the wire. In the third and last stage of squeezing movement the cam releases the jaws and knives, a spring returning the parts to their original position.

3,776,070

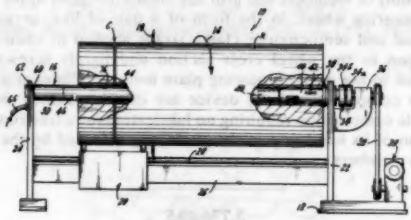
ROLL SLITTING MACHINE WITH AIR-SUPPORTED ROLL

Carl A. Stoffels, Flemington, N.J., assignor to Judelshon Industries, Inc., Jersey City, N.J.

Filed Oct. 4, 1972, Ser. No. 295,293

Int. Cl. B23b *5/14*

U.S. Cl. 82—52 **6 Claims**



In a slitting machine for cutting elongated rolls of web material into rolls of narrower widths, a mechanism for supporting the roll to be cut including a mandrel having a rotating chuck at one end, the remainder of which mandrel is a stationery hollow mandrel. As the roll is rotated by the chuck, the core of the roll rotates on, and is supported by, the stationery mandrel. Air is delivered to the interior of the stationery mandrel and is forced through air ports along the top of the mandrel; which forms a thin layer of air between the mandrel and the hollow core. The air layer supports the roll, reduces friction, cools the parts and carries away any loose debris.

3,776,071

PLIER

Josef Krampe, Werner Strasse 4, Herbern/Westf., Germany

Filed Aug. 20, 1971, Ser. No. 173,608

Claims priority, application Germany, Aug. 22, 1970, P 20 41 742.9

Int. Cl. B25b 7/00

U.S. Cl. 81—415 6 Claims

A plier comprising a pair of crossed arms each of which is provided with two overlying sections composed of a synthetic plastic material. The overlying sections form a recesses in each arm in which a part of the other arm is received and pivotably guided.

ERRATUM

For Class 82—52 see:
Patent No. 3,776,070

3,776,072

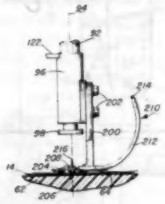
METHOD AND APPARATUS FOR CUTTING SHEET MATERIAL

Heinz Joseph Gerber; David R. Pearl, and Robert J. Oswell, all of Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Feb. 26, 1971, Ser. No. 119,151

Int. Cl. B26d 1/18

U.S. Cl. 83—34 19 Claims



A method and apparatus for cutting parts, patterns, or the like from fabrics, paper or other thin sheet material employing a rotary cutting tool which is supported for movement above a work surface of a penetrable supporting bed. The rotary cutting tool is carried by a numerically controlled translating mechanism which moves it over the work surface in two orthogonal coordinate directions. The tool is rotated at a peripheral speed substantially greater than the translation speed and has a peripheral cutting edge which performs the cutting operation while the tool is translated with a segment of the peripheral cutting edge penetrating through the sheet material supported on the work surface and into the penetrable supporting bed. The rotation of the tool is coordinated with the translation of the tool so that the leading edge of the tool rotates downwardly into the sheet material during the cutting operation. The cutting tool is suspended from the translating mechanism by an adjustable mount and a follower guide or foot that travels over the sheet material with the tool is connected to the adjustable mount and positions the mount so that the segment of the peripheral cutting edge penetrating through the sheet material into the penetrable supporting bed maintains a substantially constant penetration depth regardless of uneveness or variation in height of the penetrable bed.

3,776,073

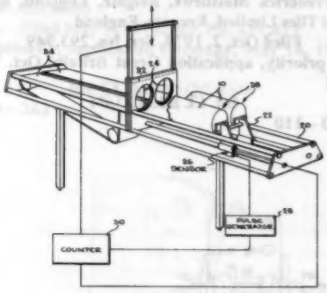
METHOD AND APPARATUS FOR PREPARING CHEESE CUTS

Heinz Runge, Niles, Ill., assignor to Kraftco Corporation, New York, N.Y.

Filed Oct. 30, 1970, Ser. No. 85,459

Int. Cl. B26d 5/24, 7/28

U.S. Cl. 83—47 9 Claims



A method and apparatus for preparing cuts from a food product such as cheese is provided. The method includes advancing a block of cheese upon a support and sensing the advancement of the block. A succession of signals are generated upon sensing the advancement and these signals are counted. The counts are accumulated by a counter until preselected values are reached. The counter initiates a timed sequence each time a desired accumulated preselected value is reached. The timed sequence stops the advancement of the cheese block and initiates a cutting device which divides the cheese into a cut of cheese. The counter may be set to accumulate unequal values so that cuts of cheese are prepared of unequal size.

3,776,074

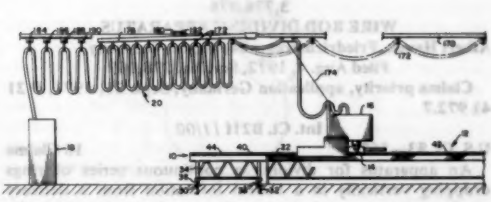
TRANSFER APPARATUS FOR AN AUTOMATED TOOL CARRIAGE

David R. Pearl, and Lawrence S. Wolfson, both of West Hartford, Conn., assignors to Gerber Garment Technology, Inc., East Hartford, Conn.

Filed Aug. 2, 1972, Ser. No. 277,477

Int. Cl. A41h 43/00; B26d 1/10

U.S. Cl. 83—71 29 Claims



A transfer table is provided for transferring an automatically controlled cutting tool carriage and the cutting tool from

one cutting table to another so that the same tool can be utilized on a plurality of cutting tables. The transfer table engages a cutting table so that the tool carriage can be driven or rolled off of one cutting table onto the transfer table and transported to another cutting table on which the cutting tool is to be operated. The transfer table is provided with a latch mechanism for securing the tool carriage on the transfer table during the transferring operation and may also include a mechanical catch which assists in holding mechanical and e'ectrical limit stops on the cutting tables inoperative whenever the tool carriage is driven on or off of the transfer table. A lock mechanism may be used to hold the cutting and transfer tables together when the tool carriage is not latched in the travelling position. For cutting systems in which the tool carriage and cutting tool are operated from a central computer by means of overhead cabling, a cable support boom may be connected to the transfer table to carry a segment of the cabling during the transfer operation.

3,776,075

MANUFACTURE OF TILES

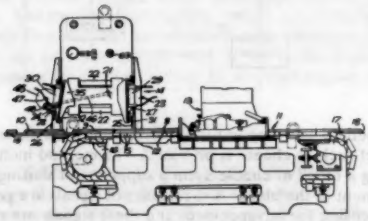
Douglas Frederick Matthews, Reigate, England, assignor to Redland Tiles Limited, Reegate, England

Filed Oct. 2, 1972, Ser. No. 293,949

Claims priority, application Great Britain, Oct. 25, 1971, 49,541/71

Int. Cl. B23d *25/04*

U.S. Cl. 83—110 **10 Claims**



Apparatus for cutting a continuously moving ribbon of tile forming material into discrete tiles of equal length and subsequently trimming the leading edge of each tile, comprises means for moving the ribbon past a cutting station and then a trimming station. At at least one of said stations there is provided a knife mounted on a knife holder reciprocable longitudinally of the direction of travel of the ribbon or tiles. The means for reciprocating the knife holder include a crank member adapted to be rotated once for each length of tile that passes said one station, the throw of the crank member being selected so that during the cutting action of the knife the forward linear speed of the knife is first less than, then greater than, and then finally less than the speed of the ribbon or tile being cut.

3,776,076

WIRE ROD DIVIDING APPARATUS

Albert Hauck, Friedrichstrasse 84, Siegen, Germany

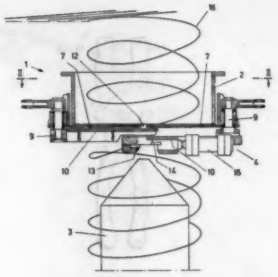
Filed Aug. 4, 1972, Ser. No. 278,069

Claims priority, application Germany, Sept. 21, 1971, P 21 41 972.7

Int. Cl. B21f *11/00*

U.S. Cl. 83—167 **16 Claims**

An apparatus for dividing a continuous series of rings dropping vertically in a helical formation from a delivery mechanism to an underlying collecting device in which the rings accumulate in coil form. The apparatus includes a plurality of pivotal elements which are movable from inoperative positions outside of the path of ring descent to operative positions extending into said path. When thus operatively positioned, the pivotal elements interrupt the further descent of rings into the underlying collecting device. A portion of the strand connecting the rings continuing to accumulate above the pivotal elements to those accumulated in coil form



therebelow is located centrally by the operatively positioned elements in the path of ring descent. A cutting mechanism carried by and movable with the pivotal elements then operates to sever the centrally located portion of the connecting strand, thereby permitting the underlying coil to be removed from the collecting device.

3,776,077

MACHINE FOR SLITTING TUBULAR FABRICS

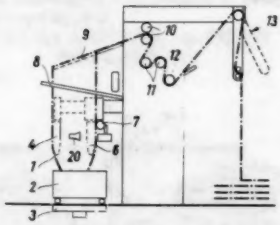
Hermann Letsche, Genkingen, Germany, assignor to Maschinenfabrik Arbach, G. Grozinger, Reutlingen, Germany

Filed June 20, 1972, Ser. No. 264,471

Claims priority, application Germany, June 21, 1971, P 21 30 721.1

Int. Cl. B26d *5/00*

U.S. Cl. 83—175 **14 Claims**

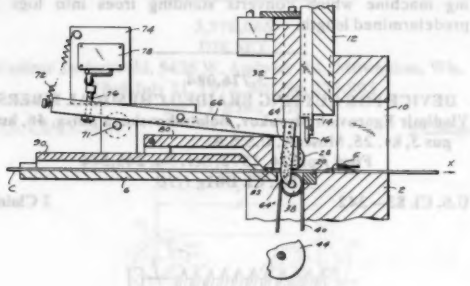


A machine for slitting a tubular knit fabric while traveling in its longitudinal direction along a substantially longitudinal marking line in or on the fabric which may deviate considerably from a straight course. The cutting device is mounted on a carriage which carries an optical tracing device which traces the marking line and causes the carriage together with the cutting devices to be shifted in a direction substantially transverse to the direction of travel of the fabric toward one or another spreading device which hold the tubular fabric distended for being slit. The time required for this transverse movement of the carriage is compensated by automatically reducing the speed of travel of the fabric. If the marking line deviates excessively from a straight course, the carriage will actuate suitable means for twisting the tubular fabric about its axis so as to move the marking line to its proper position.

3,776,078
APPARATUS FOR CUTTING CONTINUOUS SLIDE FASTENER CHAINS INTO SLIDE FASTENERS OF PREDETERMINED LENGTH

Morris Perlman, Brooklyn, N.Y., assignor to Carbide Form Grinding, Inc., Brooklyn, N.Y.

Filed Aug. 15, 1972, Ser. No. 280,900
Int. Cl. B26d 5/38
U.S. Cl. 83—210 **17 Claims**

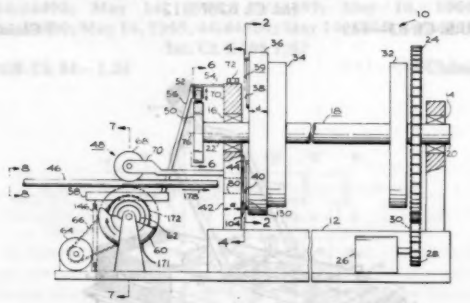


Apparatus for cutting a continuous slide fastener chain in transverse direction at successive portions of the chain which are not provided with coupling elements and in which a gap is formed between inner edges of the two stringers forming the chain to thereby produce individual fasteners from the chain. The apparatus comprises means for moving the chain in longitudinal direction and a stop finger arranged to ride on the engaged coupling elements and to drop into a gap between the edges of the stringers to thereby engage a bottom stop connecting the two stringers at the end of each gap. The stop finger is temporarily maintained in the dropped position to thereby stop further feeding of the chain and to initiate movement of a cutting blade to cut the chain downstream of the finger in transverse direction, whereafter the finger is released and the cycle repeated at the next gap.

3,776,079
GUILLOTINE CHOPPER ARRANGEMENT

Morris Steinberg, 28318 S. Golden, Palos Verdes Peninsula, Calif., and Mitchell Libow, Beverly Hills, Calif., assignors to said Steinberg, by said Libow

Filed Jan. 17, 1972, Ser. No. 218,064
Int. Cl. B26d 5/22
U.S. Cl. 83—225 **10 Claims**

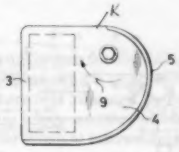


An improved guillotine chopper arrangement particularly adapted to chopping heterogenous stranded materials such as transmission lines into short preselected lengths. A high mass inertia wheel is mounted on a shaft for rotation in a preselected direction and at a preselected rotational rate and has pockets cut therein and rotating blade means are coupled in the pockets. Peripheral surfaces of the rotating blade means other than the cutting surface are tightly abutted against matching walls in the blade supporting pockets of the inertia wheel to absorb the impact energy during chopping and transmits same from the blade directly to the intertia wheel. A fixed blade is mounted in a pocket cut in a fixed blade support and the peripheral surfaces of the fixed blade are tightly abutted against matching peripheral walls of a pocket cut into the fixed blade support to absorb the impact energy during the chopping operation and transmits the forces directly to the fixed blade support. The rotating blade means passes in material chopping relationship to the fixed blade and material to be chopped is synchronously fed through an aperture in the fixed blade support, past the fixed blade a preselected distance where it is engaged by the rotating blade means during each rotation and is severed. The feed means is synchronously operated so that feeding is terminated during the chopping operation and feed occurs when the rotating blade means are rotated away from positions adjacent the fixed blade.

3,776,080
CUTTING APPARATUS

Toni Reifenhaeuser, Burglahr, and Helmut Maus, Oberlahr, both of Germany, assignors to Toni Reifenhaeuser, Ritterstrasse, Germany

Filed May 9, 1972, Ser. No. 251,811
Claims priority, application Germany, May 14, 1971, P 21 23 905.4
Int. Cl. B26d 5/20, 4/48
U.S. Cl. 83—262 **11 Claims**

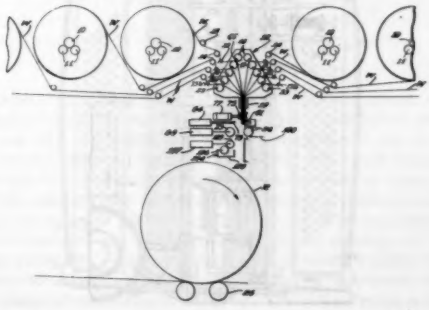


The present cutting apparatus includes a rotatable knife having an arc-shaped cutting edge extending over an angle of approximately 270° for cutting transversely in a pulling manner through an intermittently fed stream of material, and a rear portion having a shape adapted for covering the portion of the material stream cut off by the cutting portion.

3,776,081
WRAPPER SELECTOR AND DISPENSER

James F. Becker, Wilmington, Del., assignor to Downingtown Division, Beloit Corporation, Downingtown, Pa.

Division of Ser. No. 112,686, Feb. 4, 1971, Pat. No. 3,688,961.
This application Aug. 28, 1972, Ser. No. 284,252
Int. Cl. B26d 7/06; B65b 11/04
U.S. Cl. 83—272 **8 Claims**



Wrapper selector and dispenser enabling the selection of any one of a plurality of widths or grades of wrapper sheets to

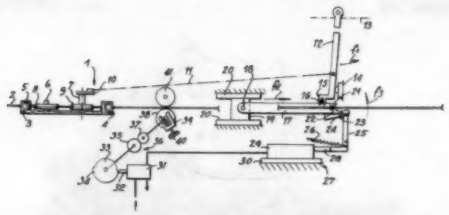
be wrapped about a roll of paper. The selector is in the form of a carriage guided for vertical movement relative to a pair of feed rolls. The carriage is provided with guides guiding the wrapper sheets toward a common throat at the bottom of the carriage, and a gripper is associated with each guide, to advance a selected sheet of paper to the feed rolls upon lowering movement of the carriage. A sheet holder which may be energized to engage all of the wrapper sheets projecting beneath the throat of the carriage is provided to hold the sheets upon return movement of the carriage, to maintain the wrapper sheets under tension and prevent disturbance of the wrapper sheets as the carriage moves in a return direction. The selector further includes a cut-off knife operable to cut the wrapper sheets to length, and sheet take up devices to retract the wrapper sheets from the knife after cutting, and a pressure nip between the take up devices and sheets to prevent the sheets from feeding back to the unwind stands by their own weight.

3,776,082

APPARATUS FOR CUTTING A TUBE INTO SEGMENTS

Alain Edouard Plegat, Asnieres, France, assignor to Societe Anonyme Des Usines Chausson, Asnieres, France

Filed Oct. 19, 1971, Ser. No. 190,587
Claims priority, application France, Oct. 22, 1970, 7038157
Int. Cl. B23d *25/02*
U.S. Cl. 83—304 **5 Claims**



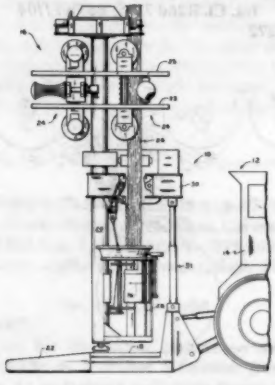
The apparatus comprises a guide for guiding a tube to be cut off by a cutting device, a retractable stop component for alternately pivoting the guide in order to engage the tube under the cutting device and means for the control of said retractable stop component.

3,776,083

LOG CUTTING APPARATUS

Robert L. Propst, 2347 Londonderry Ave., Ann Arbor, Mich.

Filed Apr. 10, 1972, Ser. No. 242,731
Int. Cl. A01g *23/08*, *23/08*
U.S. Cl. 83—324 **9 Claims**



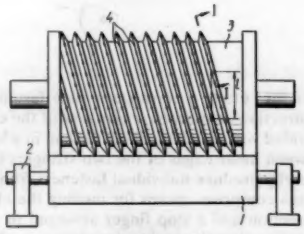
Apparatus for cutting logs, such as tree trunks, into lengths comprising a frame, a pair of spaced substantially parallel shafts rotatably mounted on the frame, and a pair of blade members mounted on the shafts so that a log can be fed between the blades. The blades are rotated in relatively opposite directions so that during a log cutting stroke, the blades move toward each other and into a log therebetween so as to cut substantially entirely through the log. fluid actuated cylinder assembly drives the blades through the cutting stroke. The blades are configured so that they will follow the path of least resistance during cutting movement into a log and the apparatus is particularly adapted for inclusion in a tree harvesting machine which converts standing trees into logs of predetermined length.

3,776,084

DEVICE FOR CUTTING BRAIDED CHEMICAL FIBERS

Vladimir Egorovich Slyvakov, Bolotnikovskaya ulitsa, 46, korpus 3, kv. 25, Moscow, U.S.S.R.

Filed Apr. 24, 1972, Ser. No. 246,544
Int. Cl. D01g *1/10*
U.S. Cl. 83—342 **2 Claims**



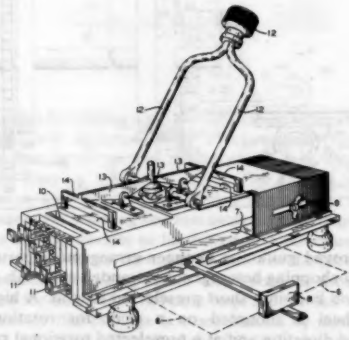
The device is provided with a cylindrical cutter shaft with a sharp helical cutting edge. Rectangular slots with a constant angular pitch are provided on the cutter shaft along the generatrices of the cylinder. Owing to the provision of slots, part of the fibers in the braid remain uncut. This makes it possible to produce a comparatively strong staple sliver wherein upon subsequent drawing differential displacement of the fibers with respect to one another is possible.

3,776,085

PAPER CUTTER FOR CUTTING SPECIALLY CODED STATIONERY FORMS

Daniel Gamez Camacho, Tehuacan, Pueblo, Mexico

Filed Feb. 16, 1972, Ser. No. 226,836
Int. Cl. B26f *1/12*
U.S. Cl. 83—449 **7 Claims**



A paper cutter in which special coded forms can be placed in which the cutter has an adjustable knife arrangement for

cutting the inserted stationery forms in such manner as to indicate, for example, sums of money. The special form is coded, for example, by imprinting thereon columns in which money amounts are designated, and when the forms are placed in the cutter in a certain manner knives can be adjusted for severing the form at a predetermined point along each of the columns, thereby indicating a sum of money and which can be read either from the cut off form or from the stub or coupon removed therefrom in the cutting operation.

3,776,086

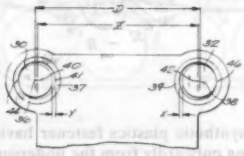
DIE SET

Kasimir Janiszewski, 5426 W. Andover Rd., Milwaukee, Wis.

Filed July 21, 1972, Ser. No. 273,893

Int. Cl. B26d *5/08*

U.S. Cl. 83—637 **5 Claims**



A die set includes a die shoe with upstanding pins and a punch holder having a depending punch and bushings which reciprocally receive the pins of the die shoe with the center distance of the pins greater than the center distance between the bushings to cause line contact of a portion of the circumference of the pins with the bushings. This engagement of the pins and bushings minimizes tilting of the punch holder and facilitates removal of the punch holder and also allows greater deflection of the die shoe in use before the pins contact the walls of the bushings thus reducing wear and galling of the pins and bushings.

3,776,087

ELECTRONIC MUSICAL INSTRUMENT WITH VARIABLE IMPEDANCE PLAYBOARD PROVIDING PORTAMENTO

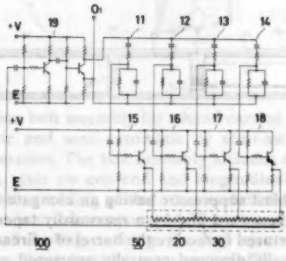
Mikio Ogi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation of Ser. No. 35,619, May 8, 1970, abandoned. This application Dec. 7, 1971, Ser. No. 205,588

Claims priority, application Japan, May 14, 1969, 44/44498; May 14, 1969, 44/44499; May 14, 1969, 44/44500; May 14, 1969, 44/44501; May 14, 1969, 44/44502

Int. Cl. G10h *1/02*

U.S. Cl. 84—1.24 **5 Claims**



An electronic musical instrument is disclosed in which a musical scale keyboard and a portamento playboard are arranged parallel and close to each other. Associated with the portamento playboard, there is provided a continuously variable frequency oscillator covering several octaves. The portamento playboard includes a manually controllable variable impedance element which is normally open circuited to render the oscillator normally nonoperative. The variable impedance element is manually actuated so that the circuit is closed providing an impedance to control the frequency of the oscillator. The impedance element is so arranged that the position thereof actuated produces the same named note as the nearest key in the musical scale keyboard.

3,776,088

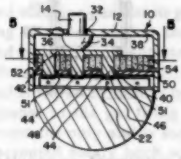
CHORD PLAYING ATTACHMENT FOR STRING MUSICAL INSTRUMENTS

Cecil E. P. Jones, 3782 Oseola St., Denver, Colo.

Filed Sept. 20, 1972, Ser. No. 290,628

Int. Cl. G10d

U.S. Cl. 84—317 **7 Claims**



A chord playing attachment for fastening onto the neck of a string musical instrument, which attachment utilizes a plurality of weighted pressure feet actuated by buttons and disposed in proper relationship to one another in biased condition away from the strings of the musical instruments when in their static position. When the buttons are actuated by manually depressing them they mechanically provide a plurality of different chords in such a manner that all of the feet of a given button strike the strings of the instrument simultaneously.

3,776,089

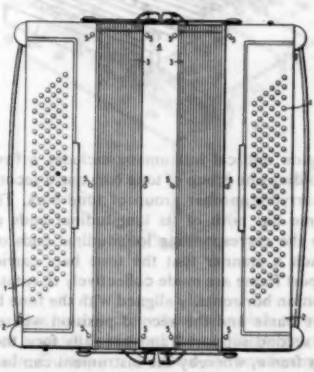
MUSICAL INSTRUMENT, SIMILAR TO THE ACCORDION AND THE LIKE, FOR EASILY PRODUCING RAPID HARMONIC SEQUENCES

Arthur Eslon Cohen, c/o S. Cooke, 1504 Upshire Rd. Apt. 2C, Baltimore, Md.

Filed May 12, 1971, Ser. No. 142,636

Int. Cl. G10d *1/00*

U.S. Cl. 84—376 **2 Claims**



A musical instrument, similar to the accordion and the like, containing two standard accordion bass section devices, on

each of which preset chords can be produced by depressing single buttons, and on each of which individual bass tones can be produced by depressing other single buttons, such that a wide variety of rapid harmonic sequences can be easily produced.

3,776,090

SOUND PRODUCING PASSAGE FOR MUSICAL WIND INSTRUMENTS

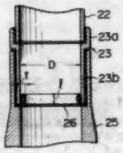
Yasuharu Ihara, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Sept. 11, 1972, Ser. No. 287,875

Claims priority, application Japan, Sept. 10, 1971, 46/82484

Int. Cl. G10d 7/00

U.S. Cl. 84—380 **7 Claims**



In a musical wind instrument, an annular projection such as an annular ring is provided on the inner wall of the tubular neck section, or tubular body section contiguous thereto, or cylindrical joint member connecting the neck and body sections. The annular projection narrows the air passage at the portion in which the projection is provided, and serves to obtain sharp and clear tones which are very quick in rising or building-up thereof.

3,776,091

FOLDABLE PERCUSSION MUSICAL INSTRUMENT

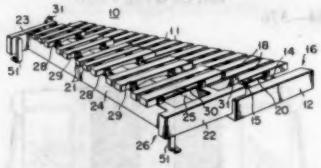
Shigeo Suzuki, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Japan

Filed Aug. 11, 1972, Ser. No. 279,760

Claims priority, application Japan, Aug. 12, 1972, 46/71671; Aug. 12, 1971, 46/71672

Int. Cl. G10d 13/08

U.S. Cl. 84—403 **22 Claims**



A percussion musical instrument includes a first support frame for holding one group of tone bars and a second support frame for carrying another group of tone bars. The second support frame has both of its longitudinal ends connected rotatably to the corresponding longitudinal ends of the first frame in such a manner that the tone bars carried on the second support frame are made collectively to rotate between the first position horizontally aligned with the tone bars of the first support frame and the second position where the tone bass of the second support frame spatially face those of the first support frame, whereby the instrument can be easily set in the first position for performance and to the second position convenient for the whole musical instrument to be carried by the player himself.

3,776,092

FASTENER

Clifford A. Seckerson, Iver Heath, England, assignor to TRW Inc., Cleveland, Ohio

Filed Dec. 16, 1971, Ser. No. 208,723

Claims priority, application Great Britain, Dec. 23, 1970, 6,113/70

Int. Cl. F16b 13/04, 19/00

U.S. Cl. 85—5 R **8 Claims**

A resilient synthetic plastics fastener having a head and a shank extending outwardly from the undersurface of the head and comprising a longitudinal stem and two longitudinal flanges lying one on each side of the stem. The flanges are joined to the stem by resilient webs and are compressible inwardly of the shank towards the stem. Each flange has a longitudinal edge remote from the web and an outer surface which comprises a longitudinal operative face adjacent the said edge and a longitudinal inoperative face between the operative face and the web. The operative face of each flange is convexly curved in section and is adapted to engage the rim of a circular aperture when the shank is inserted through the aperture and the inoperative face is adapted to clear the rim of the aperture so as to substantially reduce the area of interference between the flanges and the rim of the aperture.

3,776,093

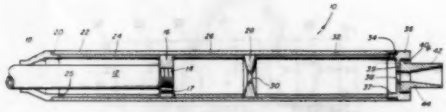
MUZZLE BLAST SUPPRESSOR

Robert A. Leverance, College Park, and Morrison B. Moore, III, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 13, 1969, Ser. No. 876,519

Int. Cl. F41c 21/18

U.S. Cl. 89—14 D **1 Claim**



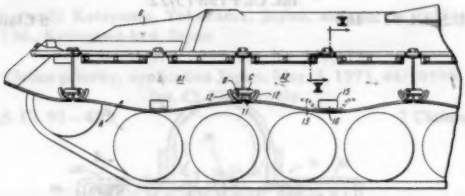
A muzzle blast suppressor having an elongate hollow body closed at its rearward end by a rearwardly tapering closure, centrally apertured to receive the barrel of a firearm, and having an internally disposed centrally apertured and threaded disc to which the muzzle of the firearm is threadedly secured. The forward end of the hollow body is closed by a centrally apertured closure, and a single internal baffle is positioned intermediate the forward closure and the threaded disc.

3,776,094

FLEXIBLE STRUCTURAL MEMBER FOR A VEHICLE CASING

Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummiwerke AG, Cologne, Germany

Filed Sept. 29, 1971, Ser. No. 184,874
Claims priority, application Germany, Oct. 1, 1970, P 20 48 205.7
Int. Cl. F41h 5/06
U.S. Cl. 89—36 A 13 Claims



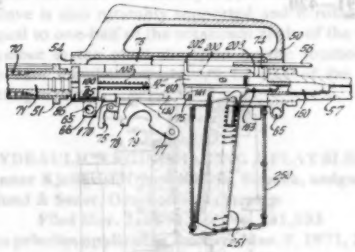
A vehicle casing is made up of interconnected structural members with each structural member comprising a plurality of flat plates arranged in adjacent spaced coplanar relation and encased in elastic material which holds the plates in flexibly interconnected relation. Fabric embedded in the elastic material on at least one side of the plates provides reinforcing for the structural member.

3,776,095

WEAPON CONVERSION BOLT ASSEMBLY DEVICE

Maxwell G. Atchisson, Bldg. 14, Apt. 1, Sussex Cir., Marietta, Ga.

Filed Nov. 5, 1971, Ser. No. 196,087
Int. Cl. F41d 11/00
U.S. Cl. 89—128 31 Claims



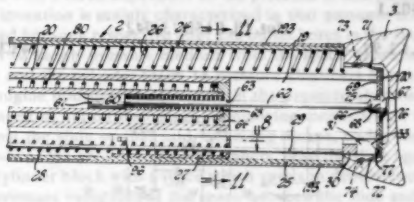
A conversion bolt assembly for a hand carried weapon having automatic and semi-automatic or semi-automatic only modes of operation. The bolt assembly includes a tube having a fixed back plate on one end and longitudinally extending slots to permit spreading of the other end of the tube for assembly of the internal components. The internal components include a bolt having a firing pin and ejector assembled thereon, a recoil mechanism, an extractor affixed to the tube, and a trip for automatic operation actuable by the bolt. An external gas deflector is affixed to the bolt on a guiding projection extending through one of the slots in the tube. A removable cartridge barrel is provided at the other end of the tube.

3,776,096

GAS OPERATED FIREARM

John S. Donovan, 16503 Santa Rosa, Detroit, Mich.

Filed Oct. 21, 1971, Ser. No. 191,297
Int. Cl. F41d 5/08
U.S. Cl. 89—174 20 Claims



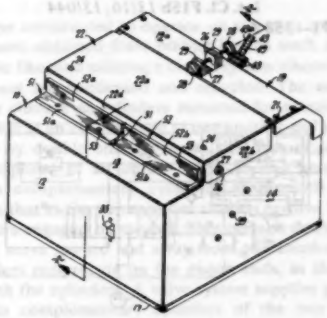
A belt fed, gas fired machine gun has its gas port located just forward of the firing chamber so that the weight of its associated cylinder and piston is concentrated towards the rear of the gun. Power for operating the bolt, firing pin hammer and ammunition feed is stored in springs opposing movement of the piston in response to the gas firing pressure. The bolt has longitudinal movement only and is locked in chambered position by a cam actuated rotary latch which also performs the triggering function when the gun is operated in the full automatic setting. Interlinked ammunition is fed transversely through the gun by reciprocal tray pieces which are actuated by leaf springs whose return movement is imparted by return of the bolt to its chambered position. Vertically slidable sear plates latchably control the firing pin hammer, which is mounted telescopically within the bolt. The gun is assemblable for either right or left hand operation.

3,776,097

BEVELING MACHINE AND METHOD

Gerald T. Rooks, San Francisco, Calif., assignor to Circuit Equipment Corporation, San Bruno, Calif.

Filed Jan. 21, 1972, Ser. No. 219,636
Int. Cl. B27c 5/04
U.S. Cl. 90—16 6 Claims

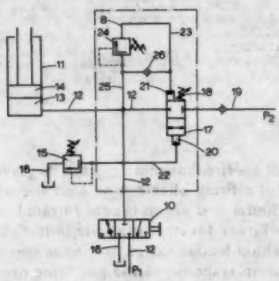


Beveling machine and method in which a workpiece is passed over a small portion of the cutting edge of a circular cutting blade. Guides are provided for positioning the workpiece, and means is provided for adjusting the relative positions of the guides and blade to adjust the depth and angle of cut.

3,776,098
CONTROL ARRANGEMENTS FOR MINE ROOF SUPPORT PROPS

Volker Behrens, Dortmund-Scharnhorst; Walter Weirich, Dortmund, and Harry Rosenberg, Ludinghausen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed Sept. 15, 1972, Ser. No. 289,711
Claims priority, application Germany, Sept. 17, 1971, P 21 46 502.1
Int. Cl. F15b *13/042*
U.S. Cl. 91—29 **14 Claims**



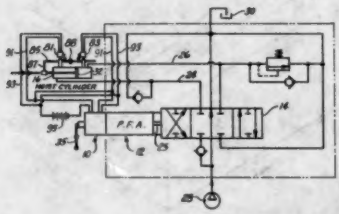
A control arrangement for a mine roof support prop which arrangement has a setting valve which can connect the working chamber of the prop to a pressure fluid source to extend the prop or to a storage vessel to retract the prop. A further valve device incorporates a slide valve which is automatically moved against the force of a spring when the prop is set and the pressure in the working chamber reaches the pressure of the source to connect a further pressure fluid source to the working chamber.

The further source supplies fluid at a higher pressure than the first source and the valve device has a further spring-loaded slide valve which opens to effect closure of the first slide valve when the pressure in the working chamber reaches the pressure of the further source.

3,776,099
AUTOMATIC RELEASE AND CENTERING DEVICE

Dale A. Knutson, Oconomowoc, Wis., assignor to Applied Power Inc., Milwaukee, Wis.

Filed Dec. 6, 1971, Ser. No. 204,902
Int. Cl. F15b *13/16, 13/044*
U.S. Cl. 91—358 A **8 Claims**

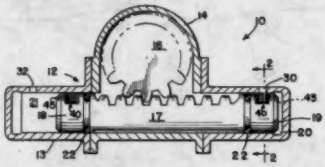


An automatic release and centering device for a double acting hydraulic cylinder, the device includes a housing, an actuating rod mounted for axial motion within the housing and being connected to the control valve for the hydraulic cylinder, the actuating rod being movable in either direction from a neutral position to an actuated position, a pair of detent members mounted on the rod, each detent member being connected to move in one direction with the rod, a detent assembly positioned to engage and hold a detent member in an actuated position, a spring positioned to bias the detent members and the rod to the neutral position and a pressure actuated release system to release the detent assembly from the detent member.

3,776,100
CUSHION DEVICE

Rudolph E. Yeh, Elmhurst, Ill., assignor to International Harvester Company, Chicago, Ill.

Continuation of Ser. No. 80,366, Oct. 13, 1970, abandoned.
This application May 1, 1972, Ser. No. 249,047
Int. Cl. F15b *15/22*
U.S. Cl. 91—409 **5 Claims**

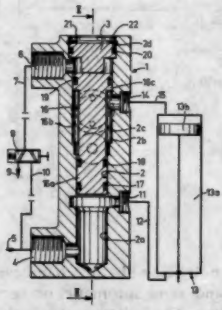


A cushion device for a contractible chamber formed by a housing and a piston movable therein with an exhaust port normally permitting fluid to exhaust from said chamber, said cushion device comprising a recess within a wall of the piston unit, a decelerating member movable within said recess and having a surface complementary to the wall of the housing adjacent to the exhaust port, with interruptions therein for metering fluid from the interior of the chamber as the piston approaches the end of its stroke.

3,776,101
CONTROL DEVICE FOR CONTROLLING A PNEUMATIC PISTON

Thomas Nussbaumer, Ammannsmatt 13, Zug, Switzerland

Filed July 13, 1972, Ser. No. 271,215
Claims priority, application Switzerland, July 23, 1971, 10863/71
Int. Cl. F15b *13/42*
U.S. Cl. 91—420 **5 Claims**



A control device for controlling a pneumatic piston and cylinder type actuator in conjunction with a 2-position 3-port valve comprises a differential piston mounted in a stepped cylinder bore for sliding movement into one or the other of two end positions according to whether compressed air is admitted under the control of the valve to the smaller diameter end of the bore or to both the smaller and larger diameter ends of the bore. Two ports opening respectively to the smaller and

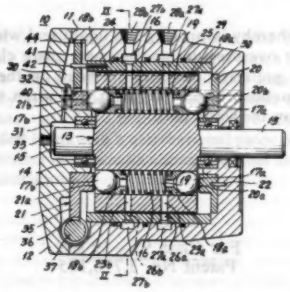
larger parts of the bore are controlled by the differential piston and each acts as a combined flow-and-return passage for pressure fluid for one end of the motor cylinder. A by-pass passage having both ends opening to the larger diameter portion of the bore permits air exhausting from the motor into this portion of the bore, during part of the travel of the differential piston, to by-pass the larger diameter part of the piston and to exhaust to atmosphere via an exhaust port which is in permanently open communication with a part of the bore between the larger and smaller diameter ends of the piston.

3,776,102

VARIABLE-DISPLACEMENT TYPE FLUID PUMP OR MOTOR

Masayoshi Katayama, Yokohama, Japan, assignor to Tokico Ltd., Kanagawa-ken, Japan

Filed Mar. 2, 1972, Ser. No. 231,172
Claims priority, application Japan, Mar. 3, 1971, 46/10596
Int. Cl. F01b *13/04*
U.S. Cl. 91—483 **7 Claims**



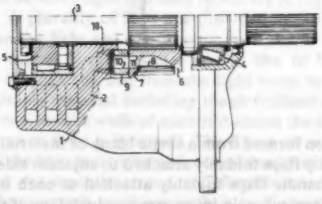
A variable-displacement type fluid pump or motor comprises, essentially, a rotor having ball pistons movable in the axial direction, a pair of cam members against which the ball pistons abut, ports for supplying hydraulic fluid into and discharging the same out of spaces between the ball pistons within cylindrical bores, a valve sleeve having ports for determining the timing of supply and discharge of the hydraulic fluid, and means for transmitting the rotation of the cam member to the valve sleeve. One of the pair of cam members is fixed, while the other is rotatably supported to a casing. The valve sleeve is also rotatably supported and is rotated by an angle equal to one-half of the rotational angle of the movable cam member in the same direction by the rotation of the movable cam member transmitted by way of the rotation transmitting means.

3,776,103

HYDRAULIC ENGINE HAVING A FLAT SLIDE

Olof Gunnar Kjellqvist, Ornskoldsvik, Sweden, assignor to AB Hagglund & Soner, Ornskoldsvik, Sweden

Filed Mar. 2, 1972, Ser. No. 231,103
Claims priority, application Sweden, Mar. 9, 1971, 2998/71
Int. Cl. F01b *1/00, 3/00*
U.S. Cl. 91—487 **6 Claims**



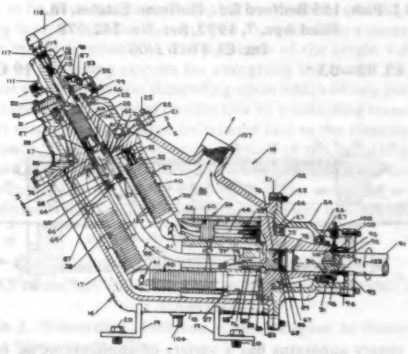
The present invention relates to a radial piston type hydraulic engine comprising a flat slide attached to the engine housing, said slide being provided with bores arranged to connect the pressure medium inlet passages and outlet passages of the engine in the engine housing with cylinder chambers of said engine. These chambers are located in a cylinder block which abuts the slide and is rotatable in relation thereto. Displaceable bushings are arranged in the engine housing and abut the slide and are subjected to the pressure prevailing in respective inlet and outlet passages to urge the slide towards the cylinder block with a force dependent on the pressure in said passages. The invention is mainly characterized in that passages are arranged between respective inlet and outlet bores in the slide in order to supply pressure medium from the space between the slide and the cylinder block to pressure chambers located in the engine housing. The pressure in the pressure chambers is arranged to act on displaceable balancing means which bear against the slide so that said balancing means, under the influence of the pressure in the chambers, urge the slide against the cylinder block with a force which varies in dependence on the pressure variations in the space between the slide and the cylinder block in the region of the discharge orifices of the passages while the engine is running.

3,776,104

FLUID OPERATED POSITIVE DISPLACEMENT ROTATING ENERGY CONVERTER

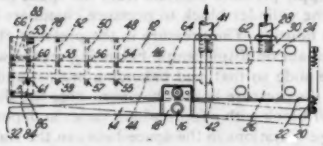
James E. Oliver, 520 Riverside Dr., Holly Hill, Fla.

Filed June 22, 1971, Ser. No. 155,505
Int. Cl. F04b *1/02, 3/00*
U.S. Cl. 91—500 **9 Claims**



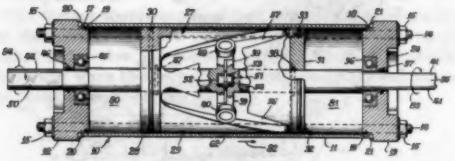
An engine constructed to operate on steam or other compressed gases obtained from boiling liquids such as water, freon, or the like, and utilizing a closed system wherein the expanded gases are condensed and recycled. The engine includes two clusters of cylinders mounted for rotation about axes disposed at an obtuse angle to one another and which are connected by double ended pistons, the ends of which are likewise disposed at an obtuse angle to one another and operate in complementary cylinders of the two cylinder clusters, so that as the two cylinder clusters revolve as a unit, the cylinders engaged by the two ends of each double ended piston will move toward and away from one another so that said cylinders reciprocate on the piston ends, as the pistons revolve with the cylinders. A valve system supplies gas under pressure to complementary cylinders of the two cylinder clusters which are located in close proximity to one another and which are at a minimum volume, due to the pistons thereof being in close proximity to the cylinder heads. This causes the cylinder clusters to revolve by forcing the cylinders to which the gas is being supplied, to move away from one another in order to increase the volume of said cylinders and accommodate more gas as it enters the cylinder chambers. An output shaft is connected to one of the cylinder clusters and rotates therewith.

3,776,105
PACKET FORMING
John Robert Coates, Deptford, London, England, assignor to Molins Limited, London, England
Filed July 7, 1971, Ser. No. 160,380
Claims priority, application Great Britain, July 17, 1970, 34,755/70
Int. Cl. B31b *1/28*
U.S. Cl. 93—12 R **18 Claims**



A method of and apparatus for making packets, the method comprising folding the packet material round a former, securing the packet material to form an open-ended packet, collapsing the former so as to allow easy removal of the packet from it, and blowing the formed packet off the former by means of one or more jets of air.

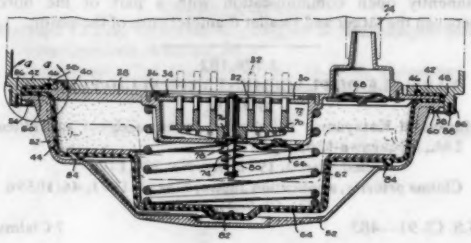
3,776,106
LINEAR TO ROTARY MOTOR
Paul J. Pish, 155 Bedford Rd., Hoffman Estates, Ill.
Filed Apr. 7, 1972, Ser. No. 242,078
Int. Cl. F01b *3/00*
U.S. Cl. 92—33 **19 Claims**



A rotary apparatus has a variety of applications as, for example, a shock absorbing coupling between driving and driven shafts, an apparatus for converting fluid inputs to the rotation of one or two shafts, an integrator for algebraically adding mechanical input signals and fluid input signals, etc. The apparatus comprises a piston within a fluid cylinder. The piston has two heads spaced apart with a skirt connecting the heads. One rotatable shaft extends through one end of the cylinder and one of the heads. A second rotatable shaft coaxial with the first extends through the other end of the cylinder and the other of the heads. Each shaft is connected by cam followers to cam slots to the piston skirt so that as the piston moves one direction in the cylinder it tends to rotate one shaft in one direction and the other shaft in the opposite direction and vice versa.

3,776,107
DIAPHRAGM PUMP FOR A RECIRCULATING TOILET
Michael R. Molus, Chatsworth, Calif., assignor to Monogram Industries, Inc., Chatsworth, Calif.
Filed July 3, 1972, Ser. No. 268,928
Int. Cl. F01b *19/00*; **F16j** *3/00*
U.S. Cl. 92—99 **4 Claims**

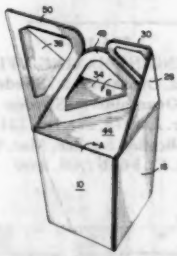
An improved pump filter for a recirculating toilet system includes a one-piece elastomeric diaphragm that is retained by a cover plate which is captured by a yieldable clamping ring. Normal pump operation is achieved through application of a pneumatic fluid such as compressed air. Potentially dangerous pressure excesses between the cover and the diaphragm can escape when the clamping ring holding forces are exceeded, and excess pressures tend to increase pressure to the "O" ring seal section thereby improving the liquid seal while relieving the excess or overpressure as the cover plate clamping ring yields in the preferred direction. A bead on the diaphragm periphery functions as an "O"-ring seal when the pump is mounted below the waste tank.



ERRATUM

For Class 93—39 see:
Patent No. 3,776,105

3,776,108
METHOD FOR FORMING A CARTON WITH INTEGRAL HANDLE
John M. Nock, New Castle, Del., assignor to Westvaco Corporation, New York, N.Y.
Filed Aug. 4, 1972, Ser. No. 277,880
Int. Cl. B65d *5/46*
U.S. Cl. 93—39 R **4 Claims**



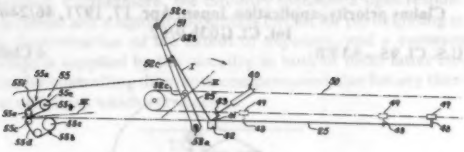
A carton formed from a single blank of material comprising pairs of top flaps foldably attached to adjacent side walls, with integral handle flaps foldably attached to each other and to the top flaps, wherein by proper manipulation of the top flaps and handle flaps, the carton is closed to automatically align the handle flaps in an upright position.

3,776,109

FOLDER FOR LARGE BOX BLANKS

Kenneth G. Clark, Pennington; Ernest T. DePass, Bound Brook; Abraham J. Manfredonia, Hillsdale, all of N.J., and Eugene A. Reiter, Morrisville, Pa., assignors to Union Camp Corporation, Wayne, N.J.

Filed Apr. 6, 1972, Ser. No. 241,777
Int. Cl. B31b *3/26*
U.S. Cl. 93—49 R 8 Claims



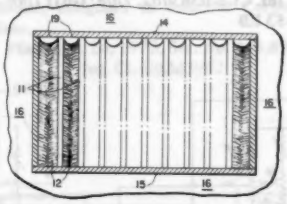
Apparatus for picking up a large size box blank from a stack, feeding it into a folding mechanism which folds one end of the blank along a pre-scored line, and then transferring such partially folded blank to a section where one man can fold the other end of the blank along a pre-scored line and feed the folded blank into a conventional piece of equipment, such as a stitcher or taper, to secure together the end of the blank and form a tube.

3,776,110

DOORLESS PASSBOX FOR X-RAY CASSETTES AND THE LIKE

Ralph S. Clayton, 3044 Fillmore Ave., El Paso, Tex.

Filed Jan. 21, 1972, Ser. No. 219,735
Int. Cl. G03d *17/00*
U.S. Cl. 95—1 11 Claims



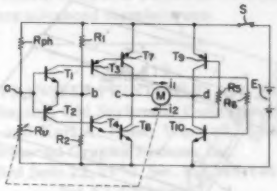
A passbox between light and dark rooms for X-ray cassettes or the like. A plurality of slots are provided in the common wall between the light and dark rooms, each slot of sufficient dimensions for an X-ray cassette or the like to be passed completely through the slot from the light room to the dark room. A suitable material including tough resilient fibers extends from one or both walls of each slot across the slot in sufficient volume to form a light seal. The fibers are sufficiently stiff to form the light seal in the absence of an object located in the slot and yet smooth, strong and flexible enough to be pushed aside to permit an object such as an X-ray cassette or the like to pass through the slot and then to return to its original light tight position.

3,776,111

AUTOMATIC EXPOSURE DETERMINING DEVICE

Osamu Maida, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Nov. 17, 1972, Ser. No. 307,346
Claims priority, application Japan, Nov. 30, 1971, 46/111757
Int. Cl. G03b *7/08, 9/02*; H02p
U.S. Cl. 95—10 CD 6 Claims



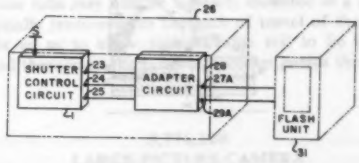
A motor driven automatic exposure determining device for a camera in which the motor is operated in forward or reverse direction from a single voltage source. In addition to driving an exposure control element, such as a shutter speed control mechanism or a diaphragm aperture control mechanism, the motor drives a variable impedance of a bridge circuit for balancing the bridge circuit. Another impedance of the bridge circuit is a photoelectric element responsive to light from the scene to be photographed. A transistor switching circuit, comprising four transistors, is employed to control the connection of the motor terminals to the terminals of the single voltage source by providing circuits for energizing the motor for forward or reverse rotation depending upon which of two pairs of the transistors is rendered conductive by a detecting transistor circuit responsive to bridge unbalance and to the direction of unbalance. By a unique interconnection of the detecting circuit and the switching circuit, a single transistor of the detecting circuit renders a pair of transistors of the switching circuit conductive simultaneously and with low power consumption.

3,776,112

ADAPTER CIRCUIT FOR USE WITH AUTO EXPOSURE CAMERA

Dennis J. Wilwerding, Littleton, Colo., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 11, 1972, Ser. No. 279,989
Int. Cl. G03b *15/05, 9/70, 7/16*
U.S. Cl. 95—10 CE 7 Claims

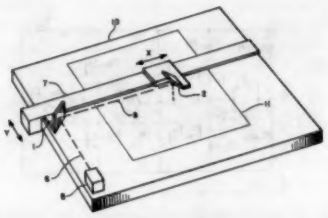


An adapter circuit is coupled to a light integrating automatic exposure control circuit of a camera to effect Flashing and Quenching operations of an associated Electronic Flash unit over a two wire connection therebetween. The adapter circuit precludes the transmission of a quench control signal from the camera to the Flash unit until a return signal, representative of a firing of the Flash unit, is received from the Flash Unit.

3,776,113
OPTICAL ARRANGEMENT FOR GRAPHICAL PLOTTERS

Robert G. Parks, Azusa, and Bruce D. Jimerson, San Pedro, both of Calif., assignors to California Computer Products, Inc., Anaheim, Calif.

Filed Aug. 31, 1972, Ser. No. 285,202
Int. Cl. G03b *29/00*
U.S. Cl. 95—12 **2 Claims**

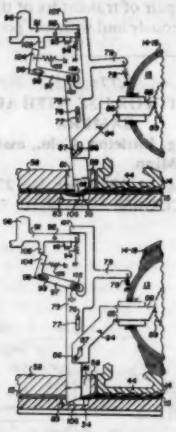


A collimated light source may be mechanically deflected in a cartesian reference frame to record graphical data on photosensitive media. Conventional or special high speed electromechanical plotting apparatus may be used to implement deflection.

3,776,114
PHOTOGRAPHIC APPARATUS

Evan A. Edwards, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 25,848, April 6, 1970, Pat. No. 3,684,206. This application Mar. 2, 1972, Ser. No. 231,438
Int. Cl. G03b *19/04*
U.S. Cl. 95—31 FM **8 Claims**

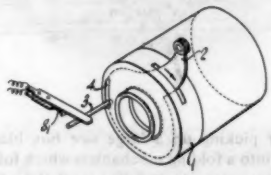


In a double compartment roll film cartridge loaded with an elongate strip of film protected by a strip of backing paper, the leading end of the paper extends from a roll of film and paper in the film supply compartment into the film take-up compartment where it is connected to a winding core. The leading end of the film lies along the corresponding portion of the paper but is not fixed or otherwise positively attached to the paper. As the core is rotated, the film is moved by frictional engagement with the paper and is wound about the core between alternate convolutions of the paper. The backing paper has a camera lock up perforation, and a metering system in a camera for receiving the cartridge arrests advancement of the film by sensing the perforation while the trailing ends of both the film and paper are in the film passageway leading into the take-up compartment, thereby improving light-tightness of the passageways leading into the two compartments.

3,776,115
CAMERA SHUTTER SYSTEM

Kyusei Kanno, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Dec. 22, 1971, Ser. No. 210,697
Claims priority, application Japan, Apr. 17, 1971, 46/24685
Int. Cl. G03b *9/02*
U.S. Cl. 95—53 EB **4 Claims**

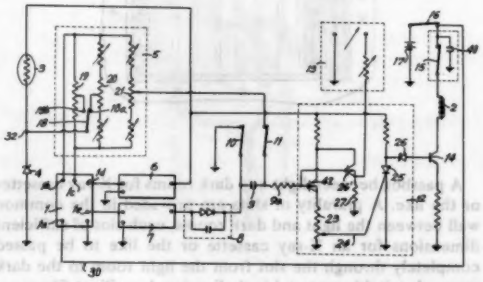


A camera includes a focal plane shutter with an electrical timing network and a lens shutter. The timing network includes an RC timing circuit connected through a first switch to a battery and a second switch shunting the RC capacitor and opened with the opening of the focal plane shutter. The first switch is opened and closed with the charging and discharging of the lens shutter, and a solenoid controlled by a solid state switch whose input is connected across the capacitor controls the shutting of the focal plane shutter.

3,776,116
ELECTRIC CAMERA SHUTTER WITH ENERGY CONTROLS

Seinan Miyakawa, Tokyo, and Mitsuhiko Shimoda, Niiza, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed May 9, 1972, Ser. No. 251,764
Claims priority, application Japan, May 13, 1971, 46/37734; May 19, 1971, 46/39721; May 19, 1971, 46/39722
Int. Cl. G03b *9/62, 7/08;* G01J *1/46*
U.S. Cl. 95—53 EB **4 Claims**



A camera which is capable of automatically determining the extent to which film in the camera is exposed. In order to terminate an exposure an electromagnet is deenergized in order to release a trailing shutter curtain. The circuitry provides for the electromagnet when it is deenergized an operation which

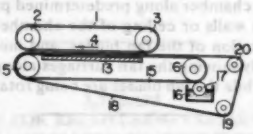
will prevent any delay due to counter electromotive force generated when the electromagnet is deenergized. Also the circuitry has a voltage source which is capable of being checked. This checking of the condition of the voltage source takes place by way of a checking circuit which includes a resistor and series-connected diode connected to a meter which indicates the condition of the voltage source. A switch is capable of connecting the voltage source to this circuit when the voltage source is to be checked. The diode is connected between the meter and the remainder of the checking circuit in a forward direction so that the meter will not be influenced in any way by the checking circuit when the latter is not operated. Furthermore, the circuitry includes a light-responsive circuit and a signal-transmitting circuit for participating in the determination of the extent of exposure, and a constant voltage is supplied by the circuitry to both of these latter circuits for controlling them with compensation also for any thermal variations which may occur.

3,776,117

METHOD AND APPARATUS FOR DEVELOPING FOR DIAZO TYPE COPYING MACHINES

Yugoro Kobayashi, Tokyo, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Feb. 16, 1972, Ser. No. 226,713
Claims priority, application Japan, Feb. 22, 1971, 46/8506
Int. Cl. G03d *7/00, 5/00*
U.S. Cl. 95—89 G **5 Claims**



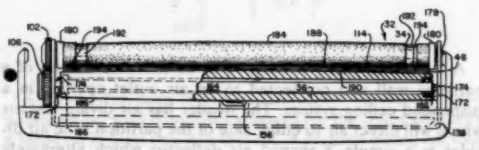
A method and an apparatus wherein a conveyer device capable of holding liquid is supplied with a developing liquid and heated to vaporize the developing liquid. Photosensitive sheets of the diazo type are exposed to the vaporized developing fluid after being exposed to an optical image of an original, so that latent images formed on them can be rendered visible.

3,776,118

PHOTOGRAPHIC FILM PROCESSING APPARATUS

John J. Driscoll, Andover, and James M. Whall, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 246,897
Int. Cl. G03d *9/02*
U.S. Cl. 95—89 L **9 Claims**



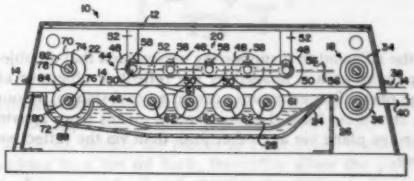
Apparatus for spreading a photographic processing fluid between a pair of elements, at least one of which forms part of a film unit. A pair of spreader rollers having juxtaposed sheet-contacting facing surfaces are rotatably mounted between ears of a mounting bracket. In this context, each end of one roller is rotatably mounted in a respective bracket ear. The other roller is hollow and rotatably mounted on an elongated shaft extending therethrough by a pair of spaced apart bearing assemblies located within that roller. Each end of the shaft is slideably disposed is an elongated slot of a respective bracket ear. A spring arrangement acts against the shaft intermediate each end of the hollow roller and the adjacent bracket ear to yieldably urge the roller mounted thereon towards the other roller. Typically, the aforementioned pair of elements have an increased thickness along respective longitudinal edges thereof and each bearing assembly is located to be disposed adjacent one such longitudinal edge as the elements are advanced between the sheet-contacting facing surfaces of the rollers. Also preferably the sheet-contacting facing surfaces are initially configured to provide a layer of such fluid having a substantially uniform thickness widthwise of such pair of elements as they are advanced therebetween.

3,776,119

DIFFUSION TRANSFER PRINTING PLATE PROCESSOR

Thomas W. Slingsby, Old Saybrook, Conn.; Hugh C. Neville, Barrington, and Karl A. Heise, Warwick, both of R.I., assignors to Richmond Graphic Systems, Inc.

Filed June 22, 1972, Ser. No. 265,146
Int. Cl. G03d *3/00*
U.S. Cl. 95—89 A **15 Claims**



A developing and processing machine used for processing diffusion transfer printing plates and the like comprising a casing in which is located a transport means which at least partially defines a path of travel for the positive plate wherein this path is specifically defined and configured to be substantially planar thereby preventing the bending or curving of the positive plate. A second path of travel is also defined within the casing through a tank portion designed to hold developer fluid within said casing. The transport means include a set of infeed rolls located at the entrance to the casing, an applicator means including two applicator roll assemblies at least one of which is arranged in intercommunicating relation between the tank portion and the positive plate, and exit rolls which may be disposed in cooperative relation with a wash means. A separating means in the form of a pivotally mounted deflector plate may also be mounted adjacent the infeed roll so as to separate the positive and negative members as they are channeled along their individual paths of travel. One or more of the applicator rolls may also be movably mounted in a direction substantially transverse to the path of travel of the positive member so as to allow said movable roll to be floatingly mounted thereon as the positive member passes through the casing.

3,776,120

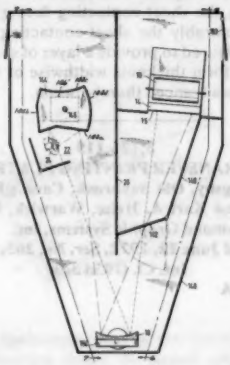
LARGE-PICTURE CAMERA

Warner Kraus, 31 Bauerstrasse, Munich, Germany

Filed Aug. 6, 1971, Ser. No. 169,633
Claims priority, application Germany, Aug. 7, 1970, P 20 39 373.1
Int. Cl. G03b *15/06*
U.S. Cl. 95—82 **15 Claims**

A large-picture camera for producing a positive photographic picture of an object especially a human being, in essentially natural size, comprises means for supporting a positive photographic material at an image plane which is adjacent

a pick-up area, a reflective objective constituted by a concave reflector for forming an image of the object positioned at the pick-up area in the image plane, illuminating means including at least one flashlamp arranged to illuminate the object at the pick-up area, second supporting means for adjustably supporting the reflector in opposed relationship to the pick-up area,



and the adjacent first supporting means such that an object at the pick-up area is imaged by the reflective objective at the image plane. Screen means prevent any substantial amount of light stemming from the illuminating means from arriving at the image plane via any other path than via the reflective objective.

3,776,121

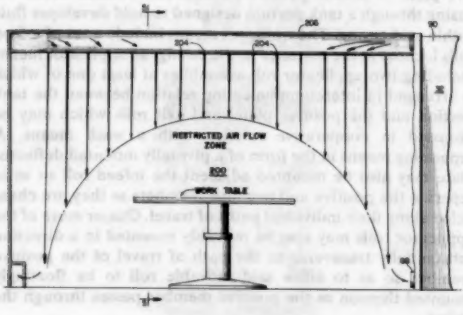
CONTROLLED ENVIRONMENTAL APPARATUS FOR INDUSTRY

Andrew Truhan, R.D. No. 3, Box 392T, Somerset, N.J.

Filed June 23, 1972, Ser. No. 265,728

Int. Cl. F24f *13/06, 9/00*

U.S. Cl. 98—33 R **5 Claims**



Apparatus is provided for controlling the environment in localized areas or zones of manufacturing and/or assembly plants and the like. A gas or air treating apparatus is connected to an outlet plenum positioned above the space or zone to be controlled. The plenum is provided with a plurality of controlled outlets for directing the treated air, generally downward at a rate progressively increasing in volume from the center of the controlled zone outwardly. The system also includes a plurality of inlet plenums spaced at floor level or slightly thereabove at controlled points adjacent but outside of the area or zone to have the controlled environmental conditions.

3,776,122

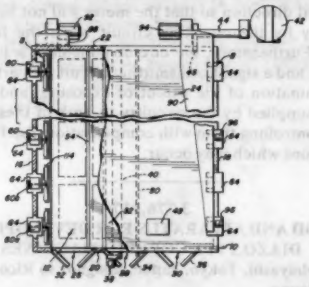
ATMOSPHERE CIRCULATION SYSTEM

John A. Julian, Chicago, Ill., assignor to Julian Engineering Company, Chicago, Ill.

Continuation-in-part of Ser. No. 124,313, March 15, 1971, abandoned. This application June 15, 1972, Ser. No. 263,152

Int. Cl. F24f *13/00*

U.S. Cl. 98—33 **14 Claims**



A system for circulating atmosphere within a chamber such as a smokehouse is disclosed. The system comprises a plurality of fans mounted on carriages which are reciprocally movable relative to the chamber along predetermined paths, preferably along the side walls or ceiling of the chamber, transverse to the axis of rotation of the fan blades, and means is provided for reciprocally moving the fan carriages along said predetermined paths while the fan blades are being rotated.

3,776,123

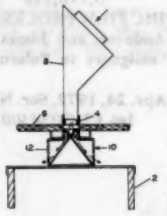
PARTITION ADAPTOR AND VENTILATING AIR DIVIDER

George E. Ehle, and James S. Peraro, both of Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Filed Apr. 14, 1972, Ser. No. 244,125

Int. Cl. F24f *7/06, 13/06*

U.S. Cl. 98—40 D **3 Claims**



A header assembly is adapted to be mounted on top of a partition wall and connected to an air outlet opening in a suspended ceiling system. The header has air divider means which will direct air to either side of the partition. The air divider is a simple X-shaped air deflector which alternately directs air to either side of the X-shape.

3,776,124

AUTOMATIC SANDWICH GRILL

Fred W. Morley, 4519 Jamestown Ct., Indianapolis, Ind.

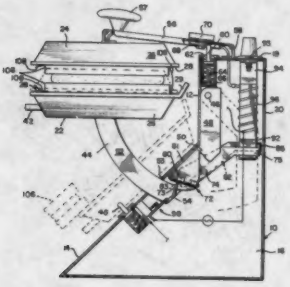
Filed Feb. 14, 1972, Ser. No. 225,906

Int. Cl. A47j *37/06*

U.S. Cl. 99—335 **15 Claims**

An automatic sandwich grill in which upper and lower heated platens engage one or more sandwiches or bread slices

with regulated continuous pressure, and a timer acts at the end of a variable cooking time to separate the platens and steeply tilt the lower platen to discharge the cooked product. The upper platen is yieldingly counterbalanced so as to press the sandwich with a regulated continuous pressure throughout the



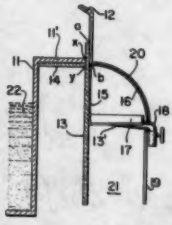
toasting. The lower platen is tiltable. A timer acts at the end of a cooking period to release a latch or actuate other mechanism to cause the platens to automatically separate and the lower platen to tilt to about 45° to discharge the toasted sandwich by gravity.

3,776,125

DEVICE FOR RECOVERING COOKING OIL SEPARATELY FROM THE HEATING FURNACE OF A DEEP FRYER

Yoshitomo Yoshioka, 23-23, 2-chome, Naka-Ikegami, Ohta-ku, Tokyo, Japan

Filed Dec. 28, 1971, Ser. No. 212,931
Claims priority, application Japan, Feb. 26, 1971, 46/9588
Int. Cl. A47j *37/12*
U.S. Cl. 99—403 **7 Claims**



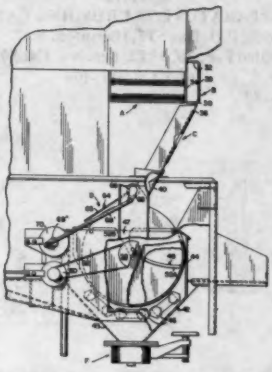
A device for deep frying particularly a device for frying potato chips in oil comprises a trough for the frying oil having a ledge on at least one side thereof. A furnace casing encloses the furnace heating space below the trough and it includes a vertical wall which abuts against the edge of the ledge and which is sealed to the ledge such as by welding. A cover encloses the top of the trough and overlaps the exterior surface of the vertical wall. The cover is secured to the vertical wall such as by securing bolts in a manner defining a drip space for the cooking oil which collects on the cover and runs down along the side thereof through the drip space. A drain device is provided on the exterior of the vertical wall in a position to receive the drip oil which may be recycled to the cooking trough.

3,776,126

AUTOMATIC DEEP FAT FRYER

John L. Veeneman; Marion E. Thomas, and Harry R. Deveraux, all of Idaho Falls, Idaho, assignors to American Potato Company, San Francisco, Calif.

Filed May 8, 1972, Ser. No. 251,611
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **7 Claims**



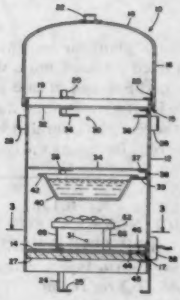
Apparatus for automatically frying potato pieces in a hot oil bath. The apparatus is arranged to receive french fry type potato pieces, subject the pieces to a pre-determined interval of cooking in a hot oil bath, thereafter allow the pieces to drain of excess hot oil and transfer the drained pieces to a holding basket for subsequent distribution. A process for automatically preparing french fries including the steps of subjecting french fry shaped pieces of potato dough to a pre-determined term of cooking in a hot oil while tumbling the pieces to insure uniform contact with the hot oil and thereafter draining any excess oil therefrom prior to transferring the drained cooked dough pieces to a holding area.

3,776,127

ELECTRIC MEAT SMOKER

Edward T. Muse, Dallas, Tex., assignor to Smoker Products, Inc., Dallas, Tex.

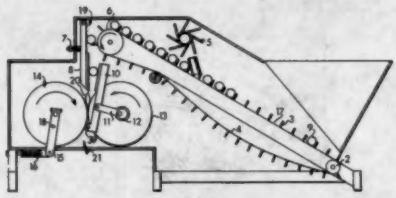
Filed June 16, 1972, Ser. No. 263,634
Int. Cl. A23b *1/04*
U.S. Cl. 99—482 **6 Claims**



A smoker type cooking apparatus having a cylindrical housing containing an electric heating element supported from the housing side wall beneath a cooking rack and a drip pan. A

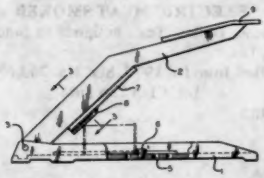
nestable tray is supported on the floor in cooperation with the heating element adapted to contain a combustible smoke generating material such as hickory. The grill and pan are commonly supported on a set of brackets affixed to the housing interior to permit easy removal, installation and cleaning. The housing is provided with means to provide upward ventilation through the unit to maintain the proper cooking atmosphere.

3,776,128
APPARATUS FOR CRUSHING CANS
Drew W. Morris, P.O. Box 515, Hampton, N.H.
Filed Feb. 29, 1972, Ser. No. 230,302
Int. Cl. B30b 7/04
U.S. Cl. 100—53 **7 Claims**



An apparatus for crushing cans into flat plate-like form. The cans are inserted into a hopper where they are transported by a compartmented conveyor to a position where they are released into a jaw mechanism which operates in timed relation to the conveyor. The cans are partially collapsed in the jaw mechanism and then are fed into a pair of counter-rotating rollers which further compress them. Synchronization is maintained by use of timing belts and a common power source.

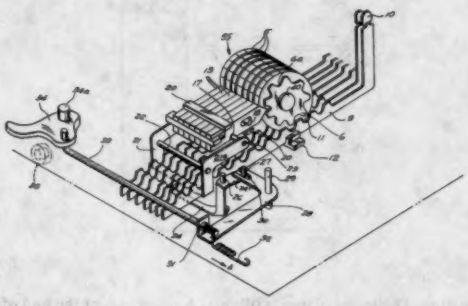
3,776,129
CONTAINER CRUSHER
Duane E. Carlson, 3709 4th Ave., South Milwaukee, Wis.
Filed Feb. 18, 1972, Ser. No. 227,430
Int. Cl. B30b 9/32
U.S. Cl. 100—98 R **4 Claims**



A base providing a platform on which a container to be crushed rests in a fixed position and a spring-supported lever pivotally connected at one end of said base. Force applied to the free end of the lever to overcome the support provided by the spring moves the lever into parallel alignment adjacent the top of said base thereby flattening the container.

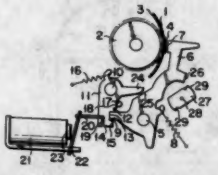
3,776,130
LOCKING ARRANGEMENT FOR MANUALLY SET PRINTING WHEELS
Yoshimichi Tamiya, Tokyo, Japan, assignor to Janome Sewing Machine Co., Ltd., Tokyo, Japan
Filed Oct. 6, 1972, Ser. No. 295,496
Claims priority, application Japan, Oct. 9, 1971, 46/93153
Int. Cl. B41j 1/28
U.S. Cl. 101—45 **10 Claims**

A set of printing wheels with circumferentially spaced types and arresting recesses, can be set to digital printing positions by manual setting means. An axial row of spring biassed arresting pawls engages a row of the arresting recesses, and yield resiliently while the printing wheels are turned during setting to a selected number. The pawls have locking recesses cooperating with a locking bar extending at right angles to the direction of movement of the pawls to the arresting position. A carriage with a platen roller is manually moved out of an



end position along a path over the printing wheels. The carriage is operatively connected with the locking bar so that the locking bar is ineffective in the end position of the carriage while the printing wheels are set, and engages the locking recesses in the pawls when the carriage moves out of the end position so that the wheels cannot be displaced by the platen roller during printing.

3,776,131
PRINTER
Tadashi Ochiai, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan
Filed Aug. 29, 1972, Ser. No. 284,681
Claims priority, application Japan, Aug. 31, 1971, 46/78474
Int. Cl. B41j 47/46
U.S. Cl. 101—93 C **9 Claims**



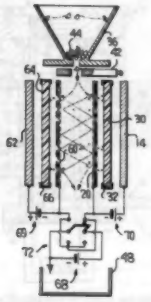
A printer comprising a typewheel, typebar and position determining device. The typewheel is made with raised characters on its periphery and rotates at constant speed. The typebar is rockably supported on a shaft and has a portion for striking a selected character through paper, etc. in its printing position. The position determining device is associated with the typebar to swing it from the rest position to the driving position. The typebar in its driving position is impulsively rocked by engaging a hammer rotating in synchronism with the typewheel, and then returns to its rest position. The typebar in its rest position engages the position determining device without rocking so as to prevent double or repeated printing.

3,776,132

FALLING DEVELOPER CURTAIN PRINTING AND COATING

Kenneth W. Rarey, South Holland, and John B. Kennedy, Jr., Oak Forest, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Feb. 1, 1971, Ser. No. 111,233
Int. Cl. B41m *1/12*; B41f *15/00*
U.S. Cl. 101—129 4 Claims



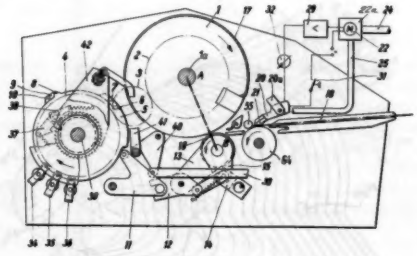
Method and apparatus for creating a falling curtain of toner adjacent to a vertically disposed stencil screen for printing or coating a vertically disposed surface of a substrate. By creating the falling curtain between a pair of spaced stencil screens, two substrates can be simultaneously coated or printed. Nonplanar objects can be printed or coated by providing a nonplanar stencil screen.

3,776,133

MOISTENING APPARATUS AND METHOD FOR DUPLICATOR SHEETS

Gerhard Ritzerfeld, Schloremer Allee 14, 1000 Berlin 33, Germany

Filed Jan. 17, 1972, Ser. No. 218,380
Claims priority, application Germany, Jan. 18, 1971, P 21 03 495.7; Nov. 13, 1971, P 21 57 225.8
Int. Cl. B41l *23/12*; B41f *31/02*; B05c *1/06*
U.S. Cl. 101—147 14 Claims



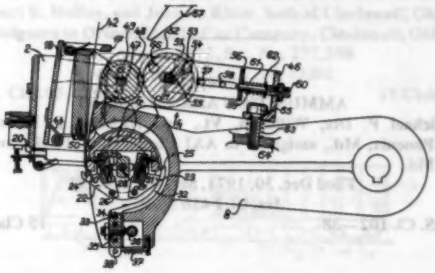
A liquid absorbent applicator for applying a liquid to the copy sheets of a duplicating machine, is maintained at a constant moisture content. Two sensing electrodes engage the applicator and are connected with control means for a motor driving a supply means for the liquid, such as a pump or liquid elevator roller. When high resistance between the electrodes, and consequently low current between the same, indicates that the applicator is too dry, the control means actuate the electric motor which drives the pump or elevator roller to increase the moisture content of the applicator to a desired constant value. When the moisture content is too high, the control means respond to the sensing means to stop the motor and the supply of moistening liquid.

3,776,134

APPARATUS FOR PRINTING TICKETS

Claude Wenger, Geneva, Switzerland, assignor to Sodeco Societe des Compteurs de Geneve S. A., Geneva, Switzerland

Filed May 6, 1971, Ser. No. 140,908
Claims priority, application Switzerland, May 11, 1970, 6943/70
Int. Cl. B41f *13/56*
U.S. Cl. 101—226 6 Claims



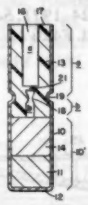
Apparatus for printing and forming tickets, consisting of a rotatable arm carrying a cylindrical platen whose surface describes an interior epicycloidal path so that printing stations arranged around the fundamental circle of the epicyloid can print information on a ticket held on the platen without the printing device skidding on the ticket; a cutting station and discharge station also being arranged on the fundamental circle so that a strip of ticket material being fed to the cutting station can be caught by a gripper on the platen, the strip being wound around the platen and cut to form a separate ticket; an inking roller is provided on the rotatable arm to ink printing devices at the printing stations before the platen reaches the printing stations.

3,776,135

NON-ELECTRIC BLASTING CAP ASSEMBLY

David T. Zebree, Kingston, N.Y., assignor to Hercules Incorporated, Wilmington, Del.

Filed June 29, 1972, Ser. No. 267,327
Int. Cl. F42b *3/10*
U.S. Cl. 102—29 20 Claims



Non-electric blasting caps, preferably of the delay type, containing a shell closure plug of new configuration, including a perforation extending through the shell and a constriction in the perforation intermediate the ends thereof to divide the perforation into upper and lower sections. The constriction is cross-sectionally dimensioned to retard egress of heat and pressure from the lower perforation section passed thereinto from combustion of one or more of the charges in the ignition area, when the combustion is initiated by action of a detonator cord positioned in the perforation. The volume of the lower perforation section is correlated with the cross-sectional dimension of the constriction to permit egress of sufficient

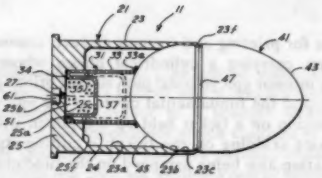
heat and pressure from the combustion for maintaining integrity of the shell while retaining sufficient heat and pressure for the combustion to propagate the resulting burning front for subsequent detonation of the base charge. A further feature of the invention is means, such as a web, or diaphragm, at least partially closing the perforation intermediate the constriction and the ingress end of the perforation for the detonator cord, as a blocking member for spacing the cord in the perforation, albeit the constriction, per se, can serve, without further means, as that stopping means.

3,776,136

AMMUNITION ARRANGEMENT

Michael P. Dix, Williston, Vt., and Nicholas J. LaCosta, Phoenix, Md., assignors to AAI Corporation, Cockeysville, Md.

Filed Dec. 30, 1971, Ser. No. 214,191
Int. Cl. F42b 9/00
U.S. Cl. 102—38 **15 Claims**



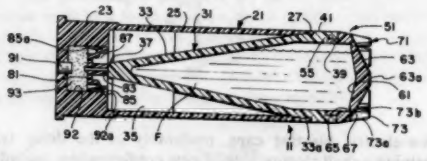
A cartridge arrangement having a longitudinally plastically deformably expandable propellant-burning-control cup formed of malleable material, which is initially retained in place to assist in propellant burning and is subsequently forwardly expelled as a function of its longitudinal expansion through reverse bend rolling action.

3,776,137

PROJECTILE AND CARTRIDGE ARRANGEMENT

David D. Abbott, Baltimore, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Sept. 24, 1971, Ser. No. 183,487
Int. Cl. F42b 11/18, 11/36
U.S. Cl. 102—41 **23 Claims**



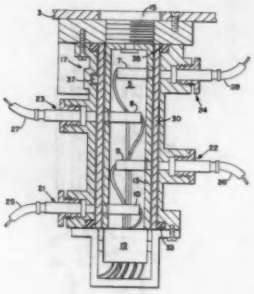
A projectile having a guard ring of circumferentially spaced posts encompassing a convex nose rupture disc and web. The projectile is mounted in a case with the nose extending in exposed condition beyond the open case end. A dual diameter chamber high-low propellant firing and gas expansion arrangement is utilized in the cartridge in conjunction with the reduced diameter tapered and finned rear end of the projectile.

3,776,138

GANGED ARMING DEVICE

Sidney A. Moses, Culver City, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 7, 1972, Ser. No. 216,113
Int. Cl. F42c 7/00, 9/02, 15/26
U.S. Cl. 102—70.2 R **3 Claims**



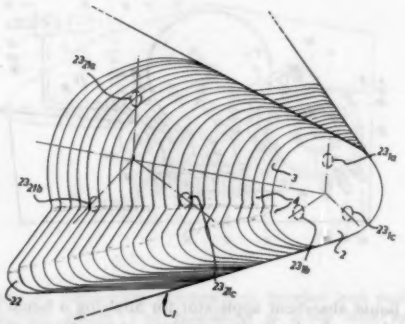
A plurality of detonators are separated from confined detonating fuses by a rotating, cylindrical shield. A gravity operating device causes this shield to rotate upon acceleration so as to align holes in the shield with the detonators and the fuses.

3,776,139

PYROLYTIC CARBON NOSE FOR HYPERSONIC VEHICLES

Gerard C. Leomand, Chaville, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed June 7, 1972, Ser. No. 260,363
Claims priority, application France, June 11, 1971, 7121386
Int. Cl. F42b 13/00
U.S. Cl. 102—105 **6 Claims**



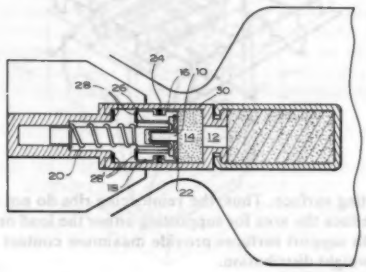
The present invention provides a spacecraft re-entry nose which makes use of the very marked anisotropy of pyrolytic graphite, which pyrolytic graphite is arranged in slices which are orientated so that the direction of least thermal conductivity is along the main axis of the nose whereas the direction of greatest thermal conductivity is at right angles to the surface of each slice. The slices are interconnected in pairs by three traversing pins of tungsten offset by a certain angle every two slices.

3,776,140

SHOT VORTEX ARMING DEVICE

Jerry O. Jones, Ventura, and Michael R. Osburn, China Lake, both of Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 22, 1971, Ser. No. 201,232
Int. Cl. F42c *15/26*
U.S. Cl. 102—70.2 R **2 Claims**



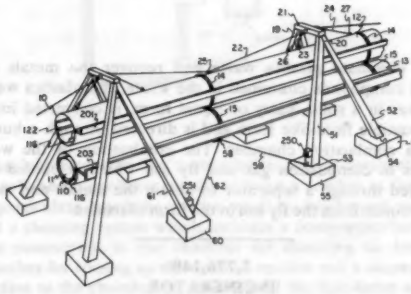
A safety-arming mechanism which senses spin and acceleration. The mechanism has a particulate material as a barrier between initiator and acceptor explosive charges. The particulate material is freed by acceleration causing set back of a piston, whose travel is retarded by pressure build up on one side of the piston. Spin forces the particulated material outwardly creating a cavity or vortex through the center and allowing transmission of an explosive reaction.

3,776,141

TRANSPORTATION SYSTEM PARTICULARLY USEFUL IN HOSTILE ENVIRONMENTS

Egon Gelhard, Mehlemer Strasse 28, Cologne, and H. Rudolf Gunkel, Egerlander Strasse 5, Usingen, both of Germany

Filed Feb. 22, 1972, Ser. No. 227,856
Claims priority, application Germany, Feb. 20, 1971, P 21 08 150.5
Int. Cl. B61b *3/02*
U.S. Cl. 104—123 **44 Claims**



A transportation system is disclosed for transporting petroleum products, mineral ores and the like in hostile climates in an economical manner and without the imposition of adverse effects on the material being transported or to the surrounding environment.

In the system, at least one pipe conduit is suspended from a plurality of supports along the path of travel with means, preferably another conduit, providing a return path to the point of origin to thus form a closed system. The conduit has a vehicular trackway contained therein and extending therealong and has means for supplying power to the vehicles passing through the conduit. A plurality of containers are removably connected to wheel sets at opposite ends thereof, with at least one of the wheel sets being driven by power means received therein.

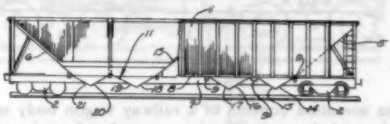
Additionally, one or more exterior tracks may be secured to the conduit to permit transportation of freight as well as passengers along the conduit line of the system.

3,776,142

SPRING LOADED RAILWAY CAR HOPPER CAR DOOR

Robert E. Molloy, and John A. Ritter, both of Cincinnati, Ohio, assignors to Ortner Freight Car Company, Cincinnati, Ohio

Filed Aug. 2, 1972, Ser. No. 277,298
Int. Cl. B61d *7/18, 7/26, 43/00*
U.S. Cl. 105—253 **15 Claims**



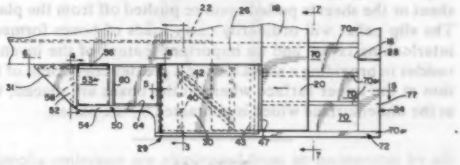
A spring assist unit for a discharge door of a hopper car or the like serving both as a spring loaded retaining door stop and an assist means for the closing of the door. The unit comprises an elongated spring support and a support guide assembly. The forward end of the spring support is pivotally affixed to a portion of the hopper door. The rearward end of the support guide assembly is pivotally affixed to an appropriate brace member of the hopper car. The rearward end of the spring support is slidably mounted in an opening in the forward end of the support guide assembly. A helical spring surrounds the spring support with one end of the spring in abutting relationship with the forward end of the spring support and the other end of the spring in abutting relationship with the forward end of the support guide assembly. The spring support has abutment surfaces thereon adapted to cooperate with the forward end of the support guide assembly to determine the open-most position of the hopper door. The spring assist unit may also be provided with means to adjust the open-most position of the hopper door.

3,776,143

RAILWAY PASSENGER VEHICLE STEP AND DOOR CONSTRUCTION

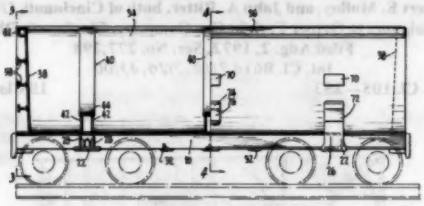
John M. Cox, Calumet Park; Robert J. Kunst, Chicago, both of Ill., and Norman M. Szala, Hammond, Ind., assignors to Pullman Incorporated, Chicago, Ill.

Filed Oct. 14, 1971, Ser. No. 189,303
Int. Cl. B61d *19/00, 23/02*
U.S. Cl. 105—343 **8 Claims**



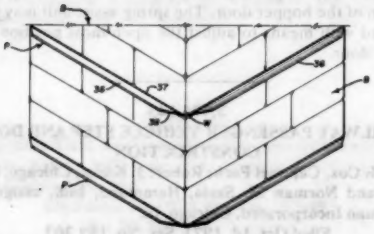
A railway passenger vehicle step and side skirt arrangement including a door receiving portion and having beam members secured to the corner posts and side sill of the vehicle body to form a reinforced corner structure wherein the steps are concealed completely from the elements when the door is in a closed position thereby keeping the stairs free of debris.

3,776,144
RAILWAY WAGON
Visvaldis Eislers, Denistone, New South Wales, Australia, assignor to Comalco Limited, Melbourne, Victoria, Australia
Filed Feb. 28, 1972, Ser. No. 229,982
Claims priority, application Australia, Mar. 2, 1971, PA 4187
Int. Cl. B61d 17/00
U.S. Cl. 105—406 R 5 Claims



The invention consists of a railway wagon body made of metal which has curved sides suspended from longitudinal stringers to eliminate side stiffeners and heavy floor plates to effect a saving in manufacturing cost and in tare weight to increase the pay load. The body is supported on curved bolsters adjacent each end and is internally strengthened by means of bulkheads.

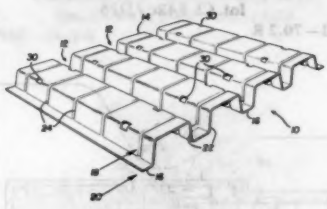
3,776,145
SLIP PALLET
Raymond F. Anderson, Evergreen, and Ronald C. Mackes, Northglenn, both of Colo., assignors to Best Quality Plastics, Inc., Denver, Colo.
Filed Mar. 27, 1972, Ser. No. 243,507
Int. Cl. B65d 19/00
U.S. Cl. 108—51 10 Claims



A slip pallet formed as a square or rectangular sheet of a synthetic resin of selected types of polyolefin. The sheet is proportioned to fit upon a platen lift and includes tabs at each edge to be gripped when the platen is thrust underneath the sheet or the sheet is pulled upon or pushed off from the platen. The slip pallet will ordinarily carry loads of boxes formed as interlocking layers and an important feature of the invention resides in providing a sheet having a greater coefficient of friction at the upper surface whereon the boxes are placed, than at the undersurface which is contacted by the platen.

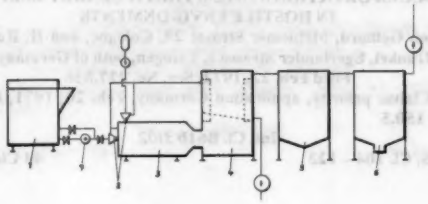
3,776,146
PALLET AND METHOD OF MANUFACTURE
James J. Morrison, Windsor, Ontario, Canada, assignor to Kaiser Steel Corporation, Detroit, Mich.
Filed Dec. 21, 1972, Ser. No. 317,261
Int. Cl. B65d 19/00
U.S. Cl. 108—51 2 Claims

A one-piece pallet having parallel corrugations and parallel reinforcing ribs transverse to the corrugations. The tops of the corrugations define a load supporting surface and the bottoms of the corrugations define a pallet supporting surface parallel to and below the load supporting surface. The reinforcing ribs project below the load supporting surface and above the pallet



supporting surface. Thus, the reinforcing ribs do not substantially reduce the area for supporting either the load or the pallet. Both support surfaces provide maximum contact area for better weight distribution.

3,776,147
DISPOSAL OF PLASTICS
Fritz Ensslin, Bad Harzburg; Gerhard Frenzel, Astfeld, and Erich Lobermann, Oker, all of Germany, assignors to Preussag Aktiengesellschaft-Metall, Goslar, Germany
Filed Feb. 8, 1972, Ser. No. 224,571
Claims priority, application Germany, Feb. 19, 1971, P 21 08 008.0
Int. Cl. F23g 7/00
U.S. Cl. 110—7 S 11 Claims

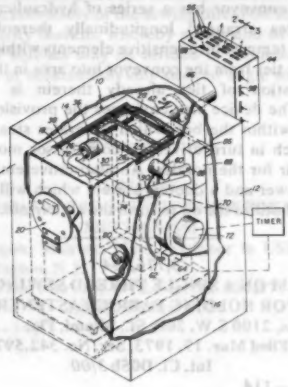


To eliminate plastics waste and recover the metals and metal compounds contained in the waste, the plastics waste, whether in a solid, pasty or liquid form, is converted into a combustible fluid-like form and is directed through a burner into a combustion chamber. The combustion of the waste results in combustion gas and fly ash which is cooled and directed through a separator to obtain the metals and metal compounds from the fly ash in the form of oxides.

3,776,148
INCINERATOR
William H. Hapgood, Brookline, and Robert D. Di Nozzi, Dedham, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed June 2, 1972, Ser. No. 259,324
Int. Cl. F23g 5/00
U.S. Cl. 110—8 A 21 Claims

An incinerator particularly suitable for in-house under-counter installation and use comprising a well heat-insulated structure including combustion or trash chamber and a second or afterburner chamber divided into two volumes, one being a volatiles combustion chamber containing the burner and the other being an exhaust flue, and recirculating means whereby combustion products and smoke are directed out of the com-

bustion chamber through the burner flame for incineration. Included also is a novel air flow system for providing circulating air for combustion simultaneously with jacket cooling, means for delaying the combustion process until the after-



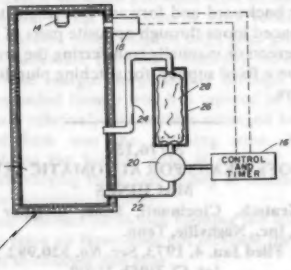
burner has become sufficiently preheated, and means for providing automatic combustion rate control whereby rate of combustion is automatically kept constant despite large variations in the type, heat content, and size of the charge being incinerated.

3,776,149

INCINERATOR ASH DISPOSAL SYSTEM

Wesley W. Teich, Wayland, and William H. Hapgood, Brookline, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed June 9, 1972, Ser. No. 261,182
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **11 Claims**



An incinerator having a chamber in which combustion of miscellaneous products occurs to leave a residue in the form of particulate inorganic matter small in weight and volume, and a cleaning system which includes a compressor having a first connection to the chamber for directing air into the chamber for stirring up the dustlike residue and a second connection to the chamber for drawing off the dust-laden air into a cyclone filter or dust separator.

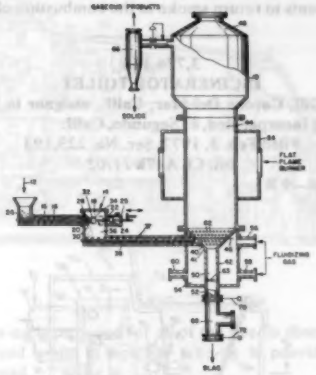
3,776,150

FLUIDIZED BED SYSTEM FOR SOLID WASTES

Paul R. Evans, Fort Ashby, W. Va., and Donald H. Graham, Salt Lake City, Utah, assignors to AWT Systems, Inc., Wilmington, Del.

Filed Mar. 6, 1972, Ser. No. 231,982
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **13 Claim**

A fluidized bed system for pyrolysis or incineration of solid wastes is provided. The solids feed is force fed to a fluidized bed apparatus having a conically shaped distributor plate and a first internal chamber above the distributor plate and a smaller second internal chamber connected to the first chamber and positioned directly below the first chamber. Solid waste is fed into the apparatus by a feeder which seals the feeder from the apparatus at a point spaced from hot-zone



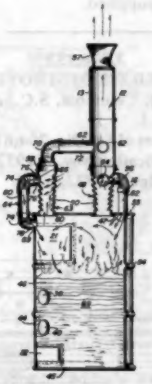
of the apparatus. The system has fluidizing gas inlets which are designed so that fluidized bed in the first internal chamber is more highly fluidized than the fluidized bed in the second internal chamber. A lock in the second internal chamber permits removal of non-reacted materials without interruption in operation of the system.

3,776,151

METHOD AND APPARATUS FOR ELIMINATING SMOKE EMISSIONS FROM INCINERATORS

Wallace C. Wilson, 1314 E. Viola Ave., Yakima, Wash.

Filed Feb. 28, 1972, Ser. No. 229,659
Int. Cl. F23g *5/00*
U.S. Cl. 110—8 R **4 Claims**



Smoke emissions are eliminated from an incinerator by admitting cool air into a stack arranged to receive smoke from a combustion chamber for inducing a draft in the stack which opposes a natural draft therein. Smoke is carried along by the induced draft and returned to the combustion chamber, so that only gases free of particulate matter are emitted from the stack. The induced draft returning to the combustion chamber as overfire air has sufficient pressure for creating turbulence in the combustion chamber for retaining the smoke in the

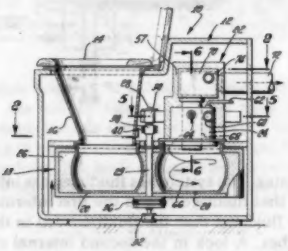
combustion chamber a time sufficient to ensure complete combustion thereof. The cool air is admitted into the stack by a louvered portion provided in the stack and arranged adjacent the combustion chamber, and, alternatively, one or more louvered elements connected to the combustion chamber and the stack so as to be in parallel with the louvered portion. Ducts are connected to the louvered portion and louvered elements to return smoke to the combustion chamber.

3,776,152

INCINERATOR TOILET

Victor A. Gill, Corona Del Mar, Calif., assignor to Nasco Engineering Incorporated, El Segundo, Calif.

Filed Feb. 3, 1972, Ser. No. 223,193
Int. Cl. A47k *11/02*
U.S. Cl. 110—9 R **12 Claims**



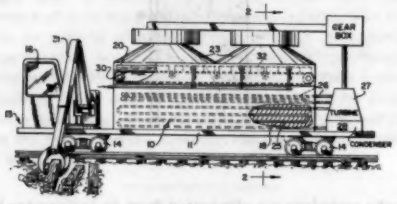
An incinerator toilet comprising a rotary carriage having thereon upwardly facing waste receptacles successively positionable below a toilet seat and a combustion means adapted to direct a burning mixture of gas and air downwardly into each receptacle at a burning station with a whirling motion. The combustion means includes a downwardly facing combustion chamber, means for introducing gas into the upper end of the chamber, and means for introducing air tangentially into the upper end of the chamber. A central vertical exhaust duct in the combustion chamber leads to an afterburner to which additional air is supplied.

3,776,153

SELF-PROPELLED TIE DESTROYING MACHINE

John Kenneth Stewart, Columbia, S.C., assignor to Cannon, Inc., Phillipsburg, N.J.

Continuation-in-part of Ser. No. 204,611, Dec. 3, 1971, abandoned. This application Nov. 9, 1972, Ser. No. 304,925
Int. Cl. F23g *7/00*
U.S. Cl. 110—10 **8 Claims**



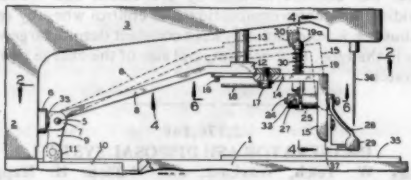
A device for destroying railroad ties which comprises fire brick insulated open-topped fire box mounted on a self-propelled track-travelling vehicle. The device is provided with at least one plenum chamber from which extends, along the top of one side of the fire box, a series of nozzles which are downwardly and inwardly directed into the box. These nozzles deliver air for combustion across the top of the box so as to form an air curtain which inhibits the escape of particles of ties being burned in the box. An endless conveyor is located adjacent the open top of the box on the side remote from the nozzles and ties are loaded onto this conveyor by means of a crane. The conveyor has a series of hydraulically operated pusher plates arranged longitudinally thereof which are operated by temperature sensitive elements within the fire box to distribute ties from the conveyor into area in the box where the combustion of ties already therein is substantially complete. The device also envisages the provision of a water wall boiler within the box which generates steam to drive a turbine which in turn drives air compressor motors to pressurize the air for the nozzles. An alternative embodiment includes a blower and a ducting system which will preheat ambient air and utilize the air to form the air curtain.

3,776,154

CLAMP ARM ON A SINGLE THREAD SEWING MACHINE FOR HOLDING FABRIC FASTENERS

Martin Weiss, 2100 S.W. 20th St., Miami, Fla.

Filed Mar. 19, 1973, Ser. No. 342,597
Int. Cl. D05b *3/00*
U.S. Cl. 112—114 **4 Claims**



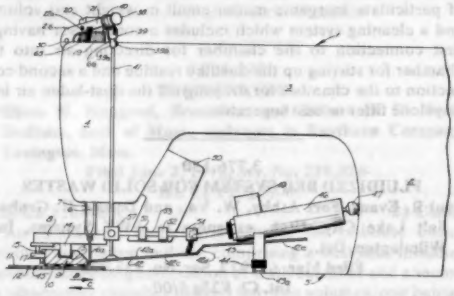
A fastener clamp arm assembly for a power driven single thread sewing machine having a transverse two path needle for stitching multi-thread loops on a fabric for securing each of a variety of flat or shank and eyelet buttons, snaps, hooks and eyes on fabrics, including a laterally adjustable calmp arm adapted to be transversely vertically pivoted on a driven member for backward and forward movement to stitch pluralities of spaced loops through opposite pairs of holes in buttons held thereon or manually transferring the arm for pivotal movement on a fixed support for stitching pluralities of single loop fasteners.

3,776,155

SEW-OFF MEANS FOR AUTOMATIC SEWING MACHINES

Jack M. Gratsch, Cincinnati, Ohio, assignor to Cutters Exchange, Inc., Nashville, Tenn.

Filed Jan. 4, 1973, Ser. No. 320,992
Int. Cl. D05b *21/00*
U.S. Cl. 112—121.15 **15 Claims**



In an automatic sewing machine of the type having an elongated guide rail for advancing the material being sewn in the

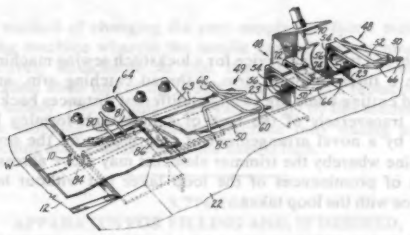
sewing direction and guiding the material at the sewing station to produce an elongated seam of predetermined straight or curved contour, means are provided to engage the material being sewn, to lift the guide rail from the material and to shift the material transversely of the sewing direction at a predetermined angularity thereto, whereby at the end of the desired seam sew-off stitches may be formed in the material to the edge thereof at substantially any desired angle to the sewing direction.

3,776,156

AUTOMATIC PROGRESSIVE HEM FORMING MECHANISM

Paul E. Morgan, Melrose, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Mar. 14, 1972, Ser. No. 234,577
Int. Cl. D05b *35/02*
U.S. Cl. 112—141 **20 Claims**



Novel pneumatic means is employed for marginally forming flexible sheet material as in over or under-edging fabric being fed into a sewing machine for hemming. One or more roll-shaped preformers are each provided with an air jet channel extending normal to the direction of work feeding as determined by perforated inner, aligned edge gage portions of the formers. The latter are preferably laterally movable to urge the semi-formed margin progressively through a final, stationary, open-ended former which is tapered in the direction of feeding to a relatively flat section arranged to project the fully formed hem into the stitching zone. Accuracy in "square" folding the leading edge is attianed, and a large range of work varying from very flimsy to relatively stiff can be handled in automatic manner.

An optional vibrator facilitates forming the stiffer material but, with the same air flows does not increase the tendency of limp material to collapse and clog.

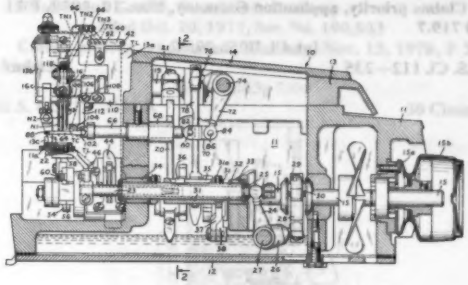
3,776,157

FLAT STITCH FORMING AND COVER THREAD LAYING MECHANISMS FOR SEWING MACHINES

Henryk Szostak, Oak Park, Ill., assignor to Union Special Machine Company, Chicago, Ill.

Filed Apr. 18, 1972, Ser. No. 245,104
Int. Cl. D05b *1/20*
U.S. Cl. 112—162 **18 Claims**

A compact, lightweight, high-speed machine of low-silhouette frame construction for forming flat seams such as those of stitch type 605 used, for example, for attaching elastic waistbands, borders, cuffs and collarettes to knit undergarments, athletic shirts and the like. The machine utilizes two or more needles each carrying a needle thread, to form, in cooperation with a looper, parallel rows of chain or double-lock stitches. A spreader which reciprocates in a straight line path and which cooperates with a special cover thread guide, places a cover thread in proper relation with all of the needle threads on the upper surface of the work piece. The looper is carried by an oscillating and horizontally reciprocating shaft and cooperates beneath the work piece with all of the needles to supply the looper thread for the chain stitches aforesaid. A



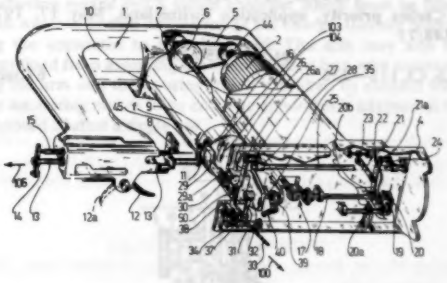
single take-up is provided for all of the needle threads and the cover thread while a separate take-up is provided for the looper thread.

3,776,158

SEWING MACHINE, IN PARTICULAR FOR MAKING THE EDGE ON THE TYPE OF SHOES COMMONLY KNOWN AS MOCASSINS

Antonio Zechini, Via Medaglie d'Oro, Fermo, Italy

Filed Nov. 8, 1972, Ser. No. 304,658
Claims priority, application Italy, Nov. 8, 1971, 3560 A/71
Int. Cl. D05b *27/02*
U.S. Cl. 112—216 **4 Claims**



A machine for sewing a binding to a vamp in making mocassins has a throad plate on which the pieces to be joined rest, a reed dog engageable with the work and having a rotary motion in the exit direction of the work and a second feed dog having an oscillating movement about an axis approximately perpendicular to the axis of the needle and synchronized with the movement of the first feed dog. The second feed dog cooperates with the first feed dog in moving the pieces to be joined and in penetrating between the folds so as to regulate the depth and width of the edge made on the mocassin. A further feature is that means operating in synchronism with the reciprocation of the needle is provided for lifting the presser foot from the work while it is being moved.

3,776,159

MATERIAL PRESSURE FOOT FOR SEWING MACHINES

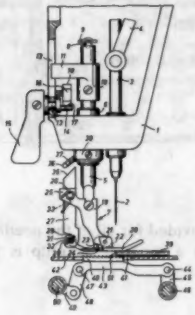
Eugen Angele, Kaiserslautern/Pfalz, Germany, assignor to Pfaff Industriemaschinen GmbH, Kaiserslautern/Pfalz, Germany

Filed June 13, 1972, Ser. No. 262,188

Claims priority, application Germany, Mar. 10, 1972, P 21 30 719.7

Int. Cl. D05b *29/02*

U.S. Cl. 112—235 3 Claims



A pivotally mounted apron or sole for applying pressure to a material being sewed is provided with locking means which temporarily locks the apron in substantially horizontal position until the initial edge of the material-to-be-sewed has passed beyond the needle in order to prevent partial or total blocking of the edge of the material by a slanted sole. Once the material to be sewn passes a predetermined point, the locking means is released so that the pivotable apron operates in its normal desirable way.

3,776,160

PRESSER FOOT FOR A SEWING MACHINE

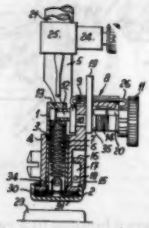
Ramon Casas-Robert, Geneva, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed May 3, 1972, Ser. No. 249,776

Claims priority, application Switzerland, May 17, 1971, 7244/71

Int. Cl. D05b *29/00*

U.S. Cl. 112—235 6 Claims



A presser foot for a sewing machine comprises a part provided with a presser member, movable with respect to an attaching part for securing the foot to a presser bar of the machine, an actuating member mounted on one of said parts for the relative movement of said parts between two end positions, and an elastic linking element mounted between said actuating member and the other said part. The actuating member may be a manual driving device or driven by a part rigid with a movable member of the machine.

3,776,161

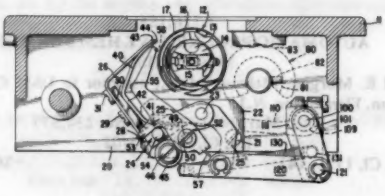
THREAD TRIMMING DEVICE FOR LOCKSTITCH SEWING MACHINES

Reinhold Papajewski, and Johann O. Kleinschmidt, both of Buechig, Germany, assignors to Singer-Werke GmbH, Blankenloch, Germany

Filed Aug. 9, 1972, Ser. No. 278,906

Int. Cl. D05b *65/02*

U.S. Cl. 112—252 4 Claims



A thread trimming device for a lockstitch sewing machine in which a thread pull-off arm, a thread catching arm, and a thread cutting blade are swung at different distances back and forth transversely of the face of a lockstitch forming loop taker by a novel arrangement of cam means on the sewing machine whereby the trimmer elements may move across the paths of prominences of the loop taker but without interference with the loop taker.

3,776,162

METHOD FOR PRODUCING PATCH POCKETS ON ARTICLES OF CLOTHING

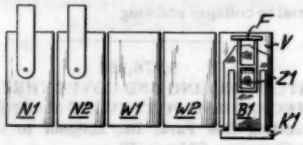
Hans Scholl, Bielefeld, Germany, assignor to Koch Adler AG, Bielefeld, Germany

Filed Nov. 15, 1972, Ser. No. 306,737

Claims priority, application Germany, Nov. 17, 1971, P 21 57 042.3

Int. Cl. D05b *1/00*

U.S. Cl. 112—262 3 Claims



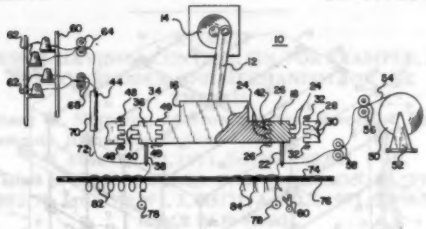
Methods for rationally producing patch pockets on articles of clothing, in which the pocket cuts are attached to the clothing by means of two parallel running or side by side arranged seams. The seams are sewn by single needle sewing machines at automatic sewing stations in connection with a preparing station and waiting stations. This reduces the operator's waiting time caused by the sewing time of the sewing machine and the time for inserting the pocket cuts and positioning of the garments. Patch pockets of the same or different size and shape in a continuous sequence may thus be produced.

3,776,163

METHOD OF CHANGING YARN SUPPLY IN A TUFTING MACHINE

Alan H. Norris, Simpsonville, and William R. Lacy, Greenville, both of S.C., assignors to Bigelow-Sanford, Inc., New York, N.Y.

Filed Oct. 2, 1972, Ser. No. 293,935
Int. Cl. D05c *3/00, 15/12*
U.S. Cl. 112—266 7 Claims



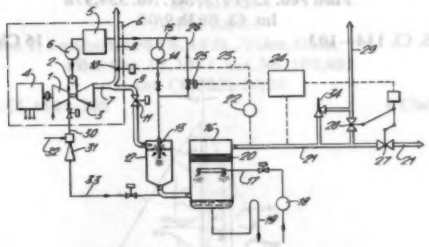
A method of changing the yarn supply in a fabric material tufting machine wherein the needle bars of the machine are selectively detachable so that the machine can continue operation while one of the needle bars receives a replacement yarn supply. The chaging of the yarn supply by this method involve stopping of the tufting machine only during actual detaching and re-attaching of the needle bars.

3,776,164

APPARATUS FOR FILLING AND, IF DESIRED, EMPTYING INERT GAS POOR IN OXYGEN INTO OR FROM HOLDS IN SHIPS, RESPECTIVELY

Thorbjorn Westrum, Kongsberg, Norway, assignor to A/S Kongsberg Vapenfabrikk, Konsberg, Norway

Filed Oct. 1, 1971, Ser. No. 185,597
Claims priority, application Norway, Oct. 3, 1970, 3750/70
Int. Cl. B63b *17/00*
U.S. Cl. 114—0.5 R 4 Claims



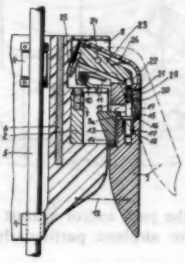
Exhaust gases from an emergency or auxilliary gas turbine/generator set are passed to an afterburner in which the rather high oxygen content of said exhaust gases is reduced to an acceptable level for use of the resulting gas as an inert explosion-proof gas for empty oil tanks. Before the gas is supplied to the tanks it is cooled by water supplied by a pump driven by the electric current produced by the generator. No blowers are required, since the turbine may operate against the pressure required for feeding the gas through the afterburner and the cooler and into the tanks. For displacing the inert gas from the tanks when desired, compressed air from the compressor unit of the turbine/generator set is tapped off and passed through an injector in which additional air from the atmosphere is entrained. The combined air is passed through the cooler and fed to the tanks through a suitable distribution system.

3,776,165

DEVICE FOR CUTTING STEEL ROPES, HAWSERS, CHAINS, CABLES AND THE LIKE UNDER THE WATER SURFACE

Udo Sabranski, Schiefbahn; Theodor Weber, and Wolfram Werner, both of Dusseldorf, all of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Germany

Filed Oct. 20, 1971, Ser. No. 190,923
Claims priority, application Germany, Nov. 13, 1970, P 20 55 843.4
Int. Cl. B63g *7/04*
U.S. Cl. 114—221 A 30 Claims



Apparatus adapted for movement underwater to partially surround and cut underwater anchoring means such as steel ropes, hawsers, chains, cables and the like including a housing carrying an explosive cutting charge and having an arm pivotally mounted in the housing and extending therefrom. The arm is biased for movement to an open position and carries charge igniting means responsive to contact by the anchoring means to be cut in the open position of the arm for detonating the charge and severing the anchoring means. The charge igniting means is provided with several safety devices including a shear pin which is ruptured by contact with the anchoring means and a piston chamber which must be filled with water to enable detonation of the charge, thereby requiring the apparatus to be submerged. The arm may also be restrained from assuming the open position by a wire connecting the arm and the housing which is broken by contact with the anchoring means to be cut. The apparatus is adapted to be disposed of after a single use.

3,776,166

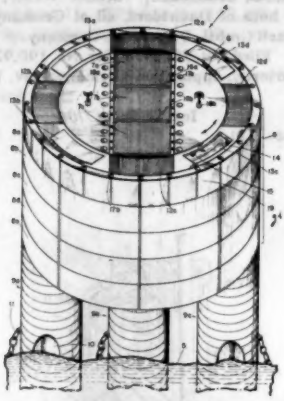
AIRCRAFT-LANDING STRIP DEVICE

Leon Mednikow, 290 9th Ave., New York, N.Y.

Continuation-in-part of Ser. No. 158,893, July 1, 1971. This application Nov. 23, 1971, Ser. No. 201,338
Int. Cl. B63b *35/50*
U.S. Cl. 114—43.5 5 Claims

A floating landing strip of miniature size having floating supporting legs of a shape and spaced sufficiently from one another to withstand violent ocean currents, with the supporting legs long enough to impart buoyancy to the entire structure while concurrently including a large amount of water in the base of the legs imparting stability to the entire structure even during violent storms, the upper pier structure including a turntable air-strip having a series of aligned variable speed surfaces for facilitating take-off and landings of aircraft, together with series of blowers and a series of baffles aligned

along the series of variable speed air-strip surfaces such that the blowers and baffles are produceable of air currents further facilitatable of take-off and landings of air craft by directing



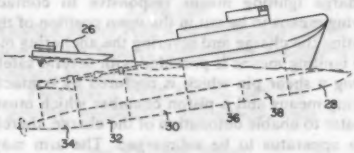
the air current in the path and/or against lift surfaces of the aircraft, such as an airplane particularly of the jet plane variety.

3,776,167

SEMI-SUBMERSIBLE TENDER

Fendall Marbury, Jr., North Chevy Chase, Md., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Dec. 2, 1971, Ser. No. 204,257
Int. Cl. B63b *35/50*
U.S. Cl. 114—43.5 **1 Claim**



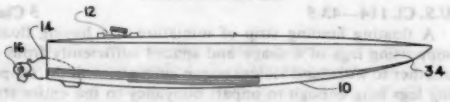
A multi-hull vessel having a grid for launching and retrieving watercraft supported between its sterns. A method for launching and retrieving watercraft from the vessel by ballasting the sterns down to immerse the watercraft-carrying grid and de-ballasting the sterns up to the normal operating draft.

3,776,168

HIGH SPEED BOAT HULL

Smith Weeks, Fresno, Calif., assignor to Belmont Boats, Inc., Fresno, Calif.

Filed June 9, 1972, Ser. No. 261,300
Int. Cl. B63b *1/34*
U.S. Cl. 114—56 **8 Claims**



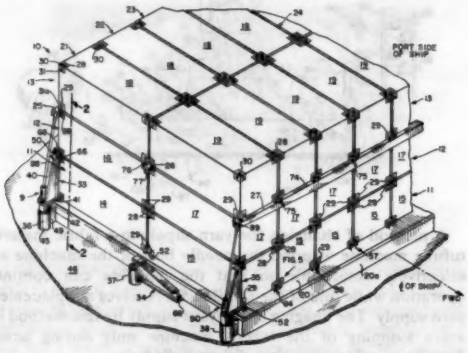
A high-speed boat hull for preferred use with a hydrojet engine having a plurality of substantially parallel strakes on the surface of the hull commencing from aft of the bow and all but the two center-most strakes running to the stern, the cross section of the strakes presenting a series of inwardly sloping steps to raise the hull in the water, direct the water flow inward toward the center of the hull and assist in turning the hull when operating at high speeds.

3,776,169

CONTAINER STOWING SYSTEM

William V. Strecker, West Islip, N.Y., assignor to Peck & Hale, Inc., West Sayville, L. I., N.Y.

Filed July 2, 1971, Ser. No. 159,447
Int. Cl. B63b *25/00*
U.S. Cl. 114—72 **14 Claims**



A freight container stowage system employing bracket member and post combinations secured to the ship and adjacent containers, and cross beams between specified tiers of the containers with their opposite ends lashed to the brackets, thereby reducing the number of connections required to secure the load, eliminating climbing along the face of the containers to position the lashings and reducing the number of men and the time required to secure an assemblage of containers arranged one, two or three tiers in height and placed either on a hatch cover or on the deck of the ship

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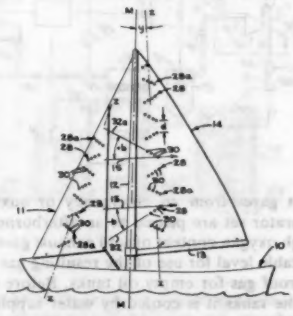
3,776,170

AIR FOIL WITH VORTEX GENERATORS

Arthur J. Slemmons, 19655 Redberry Dr., Los Gatos, Calif.

Filed Feb. 23, 1973, Ser. No. 334,978
Int. Cl. B63h *9/06*
U.S. Cl. 114—103 **16 Claims**



A sail is provided with short rows of closely spaced holes, with the axes of the rows converging and being inclined at an acute angle to the path of the free air past the sail. The converging ends of individual rows are relatively widely spaced and the rows are arranged in an array from the head to the foot of the sail. The angle between the axis of each row of holes and the direction of the free air flow path is alternated along the array from a positive to negative angle. The rows of holes, in turn, produce a row of discrete air jets on the convex,

low pressure side of the sail, forming angled aerodynamic "fences." These fences present a partial obstruction to the flow of the free air past the sail, causing the air to form twisted streams when spilling over the aerodynamic fences. These streams form continuous, helical trailing vortices that mix the free air stream with the slower moving boundary layer of air next to convex surface of the sail. The resulting mixing action continually re-energizes the boundary layer of air, thus preventing stall and improving the driving force of the sail. The principle is also useful in the control of parachutes and other thin air foils.

3,776,171

VESSEL HAVING A CONTROL FIN, FOR EXAMPLE, A KEEL OR RUDDER, AND MECHANISM FOR USE THEREIN

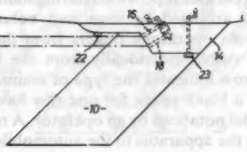
Anthony M. Sibthorpe, 24 Browning Ave., Boscombe, Bournemouth, Hampshire, England

Filed Oct. 12, 1971, Ser. No. 188,001

Claims priority, application Great Britain, Oct. 21, 1970, 49,982/70; Jan. 25, 1971, 3,105/71; Apr. 13, 1971, 9,278/71

Int. Cl. B63b 41/00

U.S. Cl. 114—141 **4 Claims**



This invention relates to a vessel having a control fin which is fixed to or integral with a shaft rotatable about its longitudinal axis in a bearing attached to the vessel, the shaft being operable to rotate the fin through at least 100° in order to move it between an extended operating position and a retracted position in which the draught of the vessel is substantially reduced with respect to its maximum value, and in order to allow variation of the angle of attack of the fin.

3,776,172

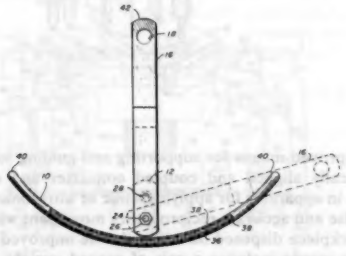
ANCHOR

Lucian T. Lambert, 6004 E. 18 St., Tulsa, Okla.

Filed Oct. 15, 1971, Ser. No. 189,691

Int. Cl. B63b 21/36

U.S. Cl. 114—208 **6 Claims**



This invention describes an anchor for use with small boats which comprises a fluke in the shape of a rectangular sheet or plate of metal formed into a cylindrical form. A short strip is welded to the plate in a radial direction. A shank is mounted on this strip by means of a bolt which permits rotation about an axis parallel to the axis of the cylinder. Detent means are provided so that when the shank is in a radial direction with respect to the fluke, it is locked in that position. However, by applying a lateral force to overcome the grip of the detent, the shank then can be hinged so it is essentially parallel to the fluke.

All sharp edges and corners of the plate are rounded and the plate is hot dipped in a protective plastic, such as polyethylene. The coating is then baked.

3,776,173

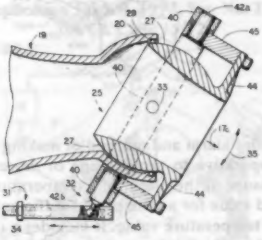
PROPULSION SYSTEM FOR A BOAT

Robert P. Horwitz, P.O. Box 2063, Newport Beach, Calif.

Filed Oct. 29, 1971, Ser. No. 193,761

Int. Cl. B63h 11/00

U.S. Cl. 115—12 R **6 Claims**



The present invention relates to a propulsion system for a boat; and more particularly discloses a propulsion system that not only provides forward movement and directional control, but also provides means for controlling the attitude of the boat.

The disclosed system accomplishes this dual result by the use of a novel jet nozzle mounting structure that permits the nozzle to pivot in a horizontal direction and/or in a vertical direction. Pivoting in either direction is independent of the other, but may still be combined with the other one when so desired, so that any combination of boat heading and attitude may be provided.

3,776,174

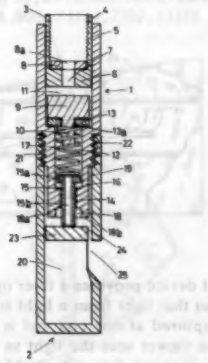
GAS PRESSURE OPERATED WARNING DEVICES

Kenneth Henry Kunoth, 40 Hinelnoa St., Rotorua, New Zealand

Filed Mar. 13, 1972, Ser. No. 234,133

Claims priority, application New Zealand, Mar. 12, 1971, 163059

U.S. Cl. 116—34 R **5 Claims**



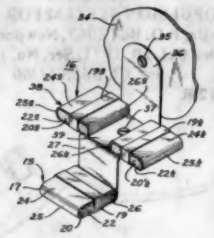
A gas pressure operated warning device which is particularly suitable for attachment to the valve stems of pneumatic tires of motor vehicles and which produces an audible noise when the gas pressure falls below a critical value.

3,776,175

AUDIBLE FIRE ALARM AND METHOD OF MAKING THE SAME

Bernard G. Peretz, 3938 Robley Ter., Oakland, Calif.

Filed Apr. 19, 1971, Ser. No. 135,279
Int. Cl. G08b 17/00, 17/08
U.S. Cl. 116—105 2 Claims



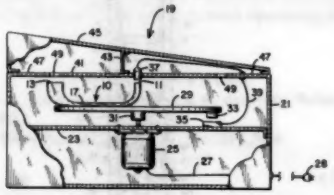
An audible fire alarm and method of making the same. The apparatus is operative to provide one or more sharp reports signaling exposure of the alarm to a temperature exceeding a predetermined value for a time period sufficient for the alarm to attain such temperature value. It includes a casing defining a chamber within which is located a packet comprising a heat-ignitable explosive charge and a wrapper folded tightly thereabout to encapsulate the charge therein. Both the casing and wrapper are formed from a material having relatively good heat conductivity, such as aluminum, so that ambient temperatures to which the alarm and casing thereof are exposed are transmitted rapidly to the explosive charge to effect ignition thereof. The method includes the steps of bending a casing blank into a chamber-defining casing, of folding a measured explosive charge into an inner wrapper element, encapsulating the folded charge-equipped inner wrapper element into an outer wrapper element, of providing a substantially moisture impervious coating about the packet defined by the wrapper elements and charge therein, and of assemblying the packet with the casing.

3,776,176

INDICATOR DEVICE WHICH CAN BE ILLUMINATED

Joseph E. Doyle, King of Prussia, Pa., assignor to Master Electronics Corporation, Huntingdon Valley, Pa.

Filed Mar. 15, 1972, Ser. No. 234,828
Int. Cl. G09f 9/00
U.S. Cl. 116—129 L 3 Claims



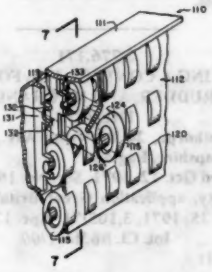
The present device provides a fiber optic member, particularly shaped so that light from a light source can be virtually completely captured at one end and is directed to the other end where the viewer sees the light as a fine line. The fiber optic member is secured to a turntable or a beam, which is mounted on the shaft of a motor or shaft driving means. The illuminated fine line end of the fiber optic member is mounted so that it can be rotated under the face of a meter dial whereby the position of the illuminated fine line with respect to the graduations or marks on the face of the meter.

3,776,177

SERVICE REMINDER APPARATUS

Spurgeon Q. Bryant, 1139 Ninth St., Apt. G., Albany, Calif., and Samuel S. Keith, 4145 Punta Alta Dr., Los Angeles, Calif.

Continuation-in-part of Ser. No. 105,438, Jan. 11, 9171, abandoned. This application June 13, 1972, Ser. No. 262,321
Int. Cl. G09f 9/00
U.S. Cl. 116—133 1 Claim



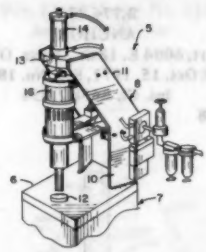
An apparatus for indicating mileage for various automotive maintenance periods is provided having numerical indicia carrying wheels arranged in rows and columns, each wheel rotatable by an operator's fingers from the rear of the apparatus and visible individually from the front. Indicia adjacent each row indicates the type of maintenance to be performed with a blank space for one row having a writing surface for special notations by an operator. A magnet is included for attaching the apparatus to the automobile — also a clip for the sun visor.

3,776,178

MACHINE FRAME STRUCTURE

William D. Collanni, 4179 Way Barry Ave., Chicago, Ill.

Filed Sept. 11, 1972, Ser. No. 287,904
Int. Cl. B06b 3/00
U.S. Cl. 116—137 A 5 Claims



Improved means for supporting and guiding superposed or vertically aligned and coupled converter and resonator or horn in apparatus for applying sonic or ultrasonic energy with precise and accurate reciprocatory movement with respect to a workpiece disposed on an anvil. The improved support and guide means includes a pair of spaced upright support and guide rods carried on cantilever frame means. A pair of vertically space bushings or an elongated bushing is slidably mounted on each support and guide rod so as to provide at least spaced two-point support on each rod. The converter is suitably mounted or supported on the bushings so as to be vertically reciprocable toward and away from the anvil in an accurate and precise path. A double acting cylinder, a single acting cylinder in combination with a compression spring, or other suitable power means is operatively connected for con-

trollably raising and lowering the converter together with the resonator or horn coupled thereto toward and away from the anvil. The vertical guide and support rods are mounted on a cantilever frame together with the power means for reciprocating the coupled converter and resonator.

3,776,179

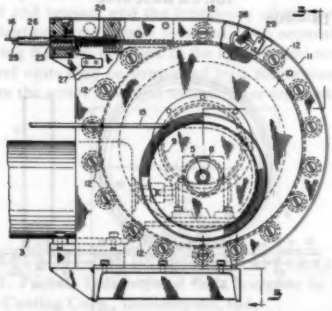
DEVICE FOR PUSHING AND PULLING IMPLEMENTS, INCLUDING CABLES, INTO AND FROM CONDUITS AND THE LIKE

William E. Raney, 511 Morewood Pkwy., Rocky River, Ohio, and Milan J. Siebert, 5617 Onaway Oval, Parma, Ohio

Continuation of Ser. No. 762,061, Sept. 24, 1968, Pat. No. 3,612,487. This application Apr. 21, 1971, Ser. No. 136,189

Int. Cl. B05c *7/02, 11/00*

U.S. Cl. 118—8 **4 Claims**



Device for pushing and pulling implements (e.g. pipe coating testers, pipe markers, pipe cleaners, pipe spray guns) along pipes or like elongated workpieces, said device having adjacent spools or reels with spirally coiled implement feeding and operating elements wound on the respective reels, the feeding element being operative to push and pull the implement into and from the pipe (or along the pipe) while the implement operating element is unwound from or rewound onto its reel.

3,776,180

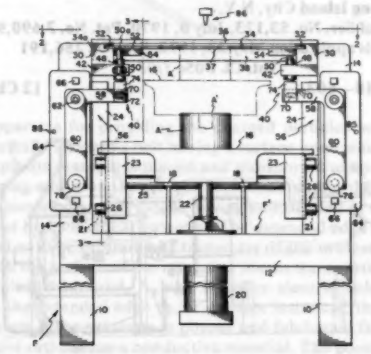
PAINT SPRAY MASK LOCATING ASSEMBLY

Edward L. Rich, 3980 Peppermill Ln., Bay City, Mich.

Filed Mar. 23, 1972, Ser. No. 237,468

Int. Cl. B05c *5/00*

U.S. Cl. 118—301 **6 Claims**



Apparatus useful in spraying a spray material on the surface of an article including a spray mask supported on a frame; a carriage for moving an article toward and away from a masking position adjacent the mask, and apparatus for precisely locating the spray mask on the support frame including a reciprocable locating pin receivable in a locating aperture provided in the underside of the spray mask and a pivotal actuator, connected to the locating pin via a lost motion connection, for moving the pin in a linear path of travel, into and out of the aperture as the actuator is swung about its fulcrum.

3,776,181

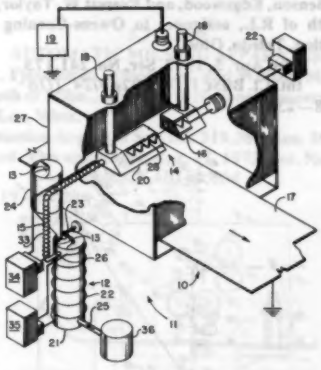
DEPOSITION APPARATUS FOR AN ORGANOMETALLIC MATERIAL

Emery P. Miller, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Division of Ser. No. 7,589, Feb. 2, 1970, Pat. No. 3,699,027. This application July 28, 1972, Ser. No. 276,113

Int. Cl. C23c *13/12*

U.S. Cl. 118—49.5 **1 Claim**



Means to electrostatically coat a moving substrate includes a liquid source; heated means to vaporize the liquid and to communicate the vapor to a heated, logitudinally slotted dispenser overlying and transversely coextensive with the substrate; and means to establish an electric potential between the slotted dispenser and the substrate whereby to electrostatically effect deposition of the vapor.

3,776,182

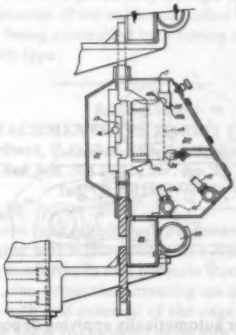
CAN TREATING APPARATUS

Ralph J. Stolle, Lebanon, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed July 31, 1972, Ser. No. 276,393

Int. Cl. B05c *11/14, 7/02, 11/16*

U.S. Cl. 118—62 **8 Claims**



The application discloses an apparatus in which newly manufactured empty cans are prepared for filling with food-

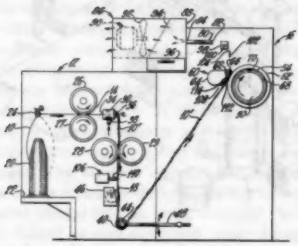
stuffs or beverages. The cans are sequentially washed, rinsed, treated, again rinsed, and finally dried, and if desired, subsequently coated and cured. The cans are individually transported through the apparatus by means of carriers which move them in a spiral path, while they are loosely retained in said carriers. A series of spray nozzles discharge against the cylindrical surfaces of the can, and the carriers are arranged to eliminate buff bodies and vortices at the back surfaces of the can. Uniform action of the sprayed material on the can bodies is further enhanced by providing negative pressure at the discharge from the carriers. Another series of spray nozzles discharge upwardly into the interior of the can body to treat the inner surfaces thereof, and to slightly lift the can bodies so they are free to rotate by virtue of contact with a rail member while being advanced at right angles to their axes.

3,776,183

APPARATUS FOR TREATING AND COLLECTING YARN

Gustav E. Benson, Edgewood, and Everett W. Taylor, Cumberland, both of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 5, 1972, Ser. No. 241,173
Int. Cl. B05c *1/14*; D02g *3/24*, *1/16*
U.S. Cl. 118—235 **14 Claims**



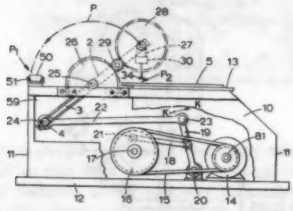
Method of and apparatus for treating and collecting yarn that includes a yarn coating device; an interim yarn take-up; automatic start-up of yarn collection by the primary yarn collector from the interim take-up; and means preventing yarn coating during yarn take-up by the interim yarn take-up.

3,776,184

APPARATUS FOR APPLYING LIQUID SAMPLES TO A SURFACE

Arthur Denwood Richard Harrison, Leatherhead, England, assignor to The University of Surrey, Guilford, Surrey, England

Filed Mar. 2, 1972, Ser. No. 231,255
Int. Cl. B67d *5/62*
U.S. Cl. 118—243 **14 Claims**



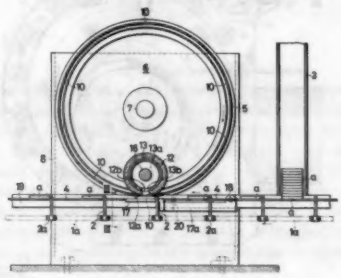
An apparatus for automatically applying deposits of a liquid sample to a surface for chromatographic analysis. The apparatus employs a dispensing device which employs a plurality of separate dispensing elements such as shaped components with looped portions, small brushes or micro-pipettes, which are arranged in an elongate row. The dispensing device is bodily moved in an arc between the surface and vessels containing the liquid samples. Each of the elements is dipped into one of the vessels to pick up a charge of liquid and then moved into contact with the surface to transfer the liquid to the surface as a defined deposit. Means, such as gearing, is provided to ensure that the dispensing elements are moved perpendicularly in relation to the surface when the latter are about to transfer the liquid to the surface.

3,776,185

CREAM FEEDER FOR APPARATUS FOR PRODUCING CONFECTIONERY

Kaoru Kawasaki, Sakai, Japan, assignor to Tenchi Kikai Kabushiki Kaisha, Sakai, Osaka Prefecture, Japan

Filed July 3, 1972, Ser. No. 268,895
Int. Cl. B05c *3/00*
U.S. Cl. 118—406 **3 Claims**



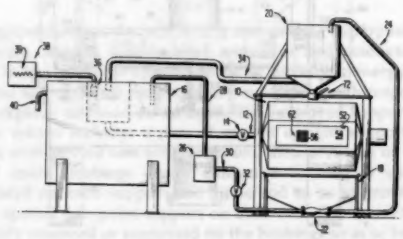
An apparatus comprises a conveyor for transporting confectionery pieces in an equidistant arrangement along a guide path, a rotary cylinder rotatable at a circumferential speed equal to the travelling speed of the confectionery pieces so as to come into contact with the travelling confectionery pieces at a predetermined position and formed with a number of apertures spaced apart by a distance equal to the space between the travelling confectionery pieces, and a cream feeder disposed within the cylinder and having outlets for supplying cream onto confectionery pieces through the apertures which cream is forced into the feeder, whereby the area over which the cream is deposited on the confectionery pieces and the amount of the cream are controlled.

3,776,186

SYSTEM FOR WET IMPACT PLATING

Lester Coch, Northport, N.Y., assignor to Waldes Kohinoor Inc., Long Island City, N.Y.

Division of Ser. No. 53,123, July 8, 1970, Pat. No. 3,690,935.
This application May 23, 1972, Ser. No. 256,191
Int. Cl. B05c *3/08*
U.S. Cl. 118—603 **12 Claims**



A system for wet impact plating of metal parts utilizing single tumbling barrel for independent parts rinsing and impact-

ing operations respectively when interchangeable, smaller perforate and imperforate barrel doors are secured to a larger door of the barrel. Rinsing water is supplied to the barrel while rotating with the perforate door in position. Water expenditure is thereby minimized and the rinsing effluent is thereby effectively separated from the impacting medium. A stationary bin with a screen for separating parts from the impacting medium and aqueous solutions is positioned beneath the barrel. Communicating with the bin in selectively operable relationship is a venturi eductor which, together with a pump communicating with a water storage tank, is operable to rapidly transfer the impacting medium to a hopper positioned over the barrel for reuse while generating sufficient turbulence to tend to cleanse the impacting medium of spent plating material and promoter chemicals. These spent materials pass, with overflow water, through an overflow strainer in the hopper to the water storage tank where they settle and are subsequently removed. Substantially all water is thereby recovered and reused, and the frequency of impacting medium rectification is materially lessened. Two separate charges of impacting medium are used in the system, and several tumbling barrel units may be supported by a single water storage tank where the water level and temperature are controlled.

3,776,187

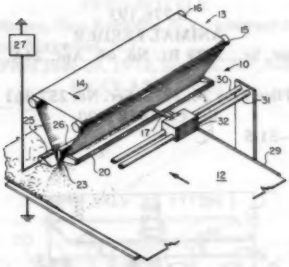
ELECTROSTATIC DEPOSITION APPARATUS

Richard O. Probst, Indianapolis, Ind., assignor to Ransburg Electro-Coating Corp., Indianapolis, Ind.

Division of Ser. No. 061,308, Aug. 5, 1970, Pat. No. 3,676,194. This application May 3, 1972, Ser. No. 249,867

Int. Cl. B05b *5/02*

U.S. Cl. 118—626 **3 Claims**



Apparatus for providing the charged particles includes an electrically insulative belt having a surface upon which the organoplastic material is placed and transported to an electrical charging and atomizing zone. Positioned within the charging and atomizing zone is means having an extended or elongated edge at high electrical potential. The extended edge is so positioned as to be substantially transverse of and in close proximity with the surface of the insulative means transporting the organoplastic material. A high intensity electric field extends from the extended edge to, or in some instances, through the substrate if the substrate is porous and fabricated from an insulative rather than a conductive material. The position of the extended edge at high electrical potential relative to the organoplastic material causes the organoplastic material to be formed into charged particles that are projected toward and deposited upon the substrate.

3,776,188

METHOD FOR INHIBITING THE FORMATION OF MALODORS FROM POULTRY FARMS

Chukei Komakine, 6-1, 3-chome, Taira Aza, Iwaki-shi, Fukushima-ken, Japan

Filed June 29, 1971, Ser. No. 158,077

Int. Cl. A01k *31/04*

U.S. Cl. 119—1 **2 Claims**

It has been discovered that evolving of offensive stench from the accumulation of droppings in fowl houses is substantially eliminated by means of coarse powders of dried ferrous sulfate hepta-hydrate. The powder is preferably used in the form of a mixture with some fly ash or dried fine powders of zeolite for the ease of dusting, and generation of the offensive odor is substantially inhibited by dusting the floor of fowl houses with said powder in advance. The thus treated droppings can be effectively utilized as an excellent fertilizer or feedstuff for fowl, fish and domestic animals.

3,776,189

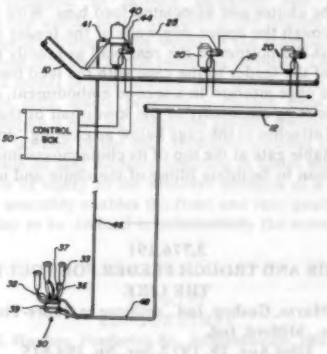
AUTOMATIC MILKING APPARATUS

Arnold R. Fjermestad, Albert Lea, and William M. Nellis, St. Paul, both of Minn., assignors to National Cooperatives, Inc., Albert Lea, Minn.

Continuation-in-part of Ser. No. 219,384, Jan. 20, 1972, abandoned. This application Apr. 17, 1972, Ser. No. 244,741

Int. Cl. A01j *05/04*

U.S. Cl. 119—14.28 **12 Claims**



A milking apparatus in which vacuum air pressure is applied to the milker units in a cyclically controlled sequence with a controlled time on and time off to provide an improved milking operation which requires only a single moving part in the form of the armature of the valve controlled by an electromagnet, the latter being controlled by a timing circuit completely of the solid state type.

3,776,190

ATTACHMENT TYPE RABBIT FEEDER

Lawrence Hurlbert, P. O. Box 818, Sandpoint, Idaho

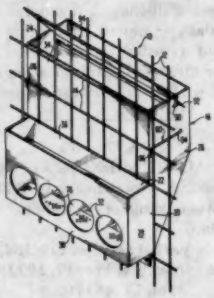
Filed Jan. 30, 1973, Ser. No. 327,912

Int. Cl. A01k *31/06*

U.S. Cl. 119—18 **14 Claims**

An attachment type rabbit feeder is generally trapezoidal in vertical elevation and is provided with a front projecting feed portion which conforms to and projects through an opening in a rabbit cage, the projection creating an offset, upper front wall coplanar with and external of the cage and a lower front wall within the cage. A Z-shaped separator baffle in one form of the feeder, separates the feeder into front and rear chutes cooperating with the upper and lower front walls and the unbroken side and rear walls. The projection of the side walls

forms in conjunction with the upper and lower front walls, an open top feed opening. A first screen member extends horizontally from the lower front wall intermediate the top and the bottom edges thereof to the separator wall and defines an upper feed bin permitting the more mature rabbits to feed therefrom. the rear wall terminates at its bottom coplanar with the upper front wall, and a second screen member extends horizontally from the bottom edge of the lower front wall to the rear wall to define a lower feed bin. A plurality of laterally spaced circular openings permit access to the lower feed bin and permit feeding by the less mature rabbits therefrom. A pivotable selector gate mounted at the top of the feeder and



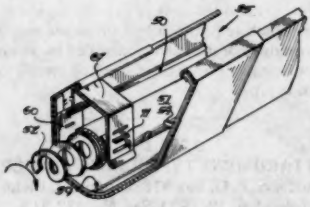
pivoting about an axis extending between the side walls and in line with the upper end of the separator baffle shields one of the chutes and facilitates access to the other chute to facilitate filling of the chutes and associated feed bins. Wire hooks extending through the upper side walls of the feeder cooperate with a lip at the bottom of the rear wall to readily permit attachment of the feeder to the cage with the feed bins projecting into the cage interior. In a second embodiment, a "creep" feeder consisting essentially of the lower half of the two-part feeder and attaches to the cage below an existing "doe" feeder and a pivotable gate at the top of its chute moves into inclined guide position to facilitate filling of the chute and underlying feed bin.

3,776,191

CONVEYOR AND TROUGH FEEDER FOR POULTRY AND THE LIKE

Robert A. Murto, Goshen, Ind., assignor to Chore-Time Equipment, Inc., Milford, Ind.

Filed Aug. 29, 1972, Ser. No. 284,615
Int. Cl. A01k *5/00*
U.S. Cl. 119—18 **6 Claims**



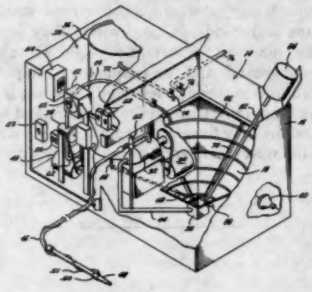
A novel poultry feeding trough and channel feed conveyor is described. The conveyor channel is provided with two series of circumferentially offset dispensing slots arrayed in a herringbone pattern to encourage equalized feed distribution along the trough length. Equalized feed distribution is further encouraged by orienting the conveyor channel in a diagonal position relative to the trough bottom. To move the feed along the channel conveyor, an auger having a series of spiral flights is included, the flights being formed with either a right hand or a left hand spiral. The elongate edges of the first series of the dispensing holes are oriented substantially parallel to the auger flights, if the auger flights have a right hand spiral. The elongate edges of the second series of holes are oriented parallel to the auger flights, if a left hand spiral auger is used.

3,776,192

ANIMAL FEEDING APPARATUS

Otis C. Stamps, and David W. Nelkirk, both of Clovis, N. Mex., assignors to Iject-O-Meter Manufacturing Co., Inc., Clovis, N. Mex.

Filed Aug. 17, 1972, Ser. No. 281,513
Int. Cl. A01k *5/02*
U.S. Cl. 119—51.11 **11 Claims**



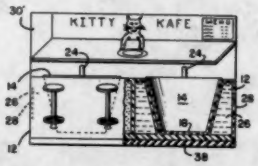
An apparatus for delivering a measured amount of fluid feed to animals having a housing with a feed chamber therein, a pump with its inlet connected to the feed chamber and its outlet connected to deliver feed to a feed line, a timer connected to control the operation of the pump to cause the pump to pump for a preset period of time and thus deliver a preselected quantity of feed, means for stirring feed within said chamber, means for heating feed within said chamber, and a wheeled vehicle on which said housing is mounted.

3,776,193

ANIMAL FEEDER

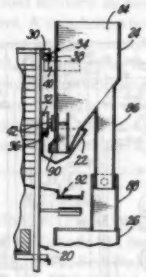
Robert L. Post, Sr., 3579 Rt. No. 46, Apt. 24A, Parsippany, N.J.

Filed May 26, 1972, Ser. No. 257,361
Int. Cl. A01k *5/00*
U.S. Cl. 119—51.5 **5 Claims**



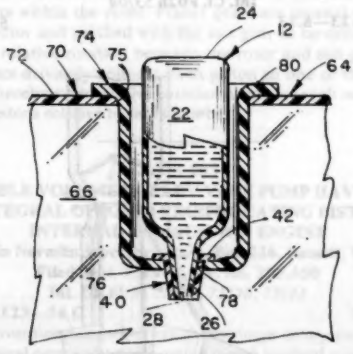
The feeder comprises a holder for food or water receptacles, in which the receptacles are of the disposable type. The holder is a pre-formed unit of plastic or similar construction having a conical recess for replaceably receiving a conical-shape receptacle, and has a locating key, of a dowel form, extending therefrom for the engagement thereof by an apertured handle which projects from one side of the disposable receptacle. The receptacle holder is hollow and has a filler plug threadedly fixed in a wall thereof to facilitate a weighting of the holder by the introduction of water, sand, and the like, and to effect a sealing of the water or sand weighting vehicle. A plurality of holders can be fixed together, in juxtaposition, by the means of bosses formed in a wall surface thereof, the bosses being configured to receive pin retainers which project from a decorative backboard.

3,776,194
AUTOMATIC FEEDER
John L. Conley, 3870 Chino Ave., Chino, Calif.
Filed May 12, 1971, Ser. No. 142,519
Int. Cl. A01k *05/02*
U.S. Cl. 119—52 B 8 Claims



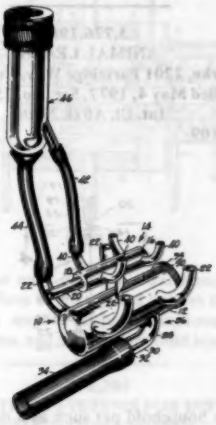
An automatic feeder for an automated poultry handling system and other automated animal handling systems having a number of spaced blocks of cages each including two banks of cages disposed back to back with several tiers of cages in each bank. The feeder has feed troughs to be mounted along the cage tiers of each cage block and a set of interconnected feed hoppers movable in unison along the feed troughs at each side of each block. The two sets of interconnected feed hoppers of each cage block are driven back and forth periodically in unison along their feed troughs to dispense feed into the troughs along the entire lengths of the troughs. The hoppers of each hopper set are interconnected by chutes to permit filling of all the hoppers of the set through a filler opening in the upper hopper.

3,776,195
FEED-BOTTLE
Allan H. Willinger, New Rochelle, N.Y., assignor to Metaframe Corporation, Maywood, N.J.
Filed June 28, 1972, Ser. No. 267,148
Int. Cl. A01k *07/00*
U.S. Cl. 119—72.5 15 Claims



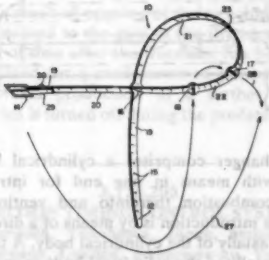
A fluid feed-bottle for animals which is entirely elastomeric and includes a spout at the open end thereof which has an internal dimension of sufficiently small nature for resisting outflow of fluid therethrough when the feed-bottle is inverted.

3,776,196
CLAW ASSEMBLY FOR MILKING MACHINES
Joseph W. Luiz, 5482 Bodega Ave., Petaluma, Calif.
Filed Apr. 19, 1972, Ser. No. 245,372
Int. Cl. A01j *05/16*
U.S. Cl. 119—14.36 8 Claims



A claw assembly for a milking machine has a tubular shaped milk receiving member provided with two pair of milk stems spatially arranged to project upwardly and outwardly therefrom and a milk outlet located on the bottom surface of the rear portion thereof. The length of the milk outlet is substantially less than that of the receiving member. The location of the milk outlet in combination with the location and spacing of the milk stems provides a unique claw structure whereby during a milking operation greater weight is applied to the rear portion of the milk receiving member than to the front portion of said member resulting in faster milking with less chance of injury to the sensitive portions of a milk cow. This claw assembly enables the front and rear quarters of the cow's udder to be drained in substantially the same length of time.

3,776,197
TONGUE STRAP
Richard E. Hughes, Frederick St., Jeffersonville, Ind.
Filed Jan. 22, 1973, Ser. No. 325,947
Int. Cl. H01k *29/00*
U.S. Cl. 119—96 4 Claims



A tongue strap for animals comprising a long, narrow flexible band, preferably of rubberoid material, formed with a first transverse slot near one end, a second transverse slot farther from that end and a third transverse slot still farther from that end, the other end of the band being threaded through the first

slot from the inside to the outside to form a first adjustable loop to enwrap the animal's tongue, and the one end of the band being threaded through the third slot from the outside to the inside and then through the second slot from the inside to the outside and then being brought into and secured in mating relation to the other end of the band to form a second adjustable loop to enwrap the lower jaw of the animal.

3,776,198

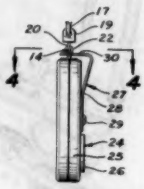
ANIMAL LEASH

Ronald L. Gehrke, 2201 Partridge Way, Union City, Calif.

Filed May 4, 1972, Ser. No. 250,268

Int. Cl. A01k *27/00*

U.S. Cl. 119—109 **3 Claims**



A leash for a household pet such as a dog, cat, or the like. The leash is intended to remain secured to the animal continuously so that it is always handy and available when it is desired to walk the animal. The leash includes a collar or other strap encircling the neck of the animal and secured thereto. A flexible tether is permanently attached adjacent one end to the collar by means of fastener structure accommodating relative movement therebetween, and adjacent its opposite end the tether is secured to retractable reel mechanism operative to retract the tether completely so that the reel mechanism is then disposed in very close proximity to the collar. Selectively operable stop means arranged with the reel mechanism and tether enables the latter to be constrained against retraction at any convenient length.

3,776,199

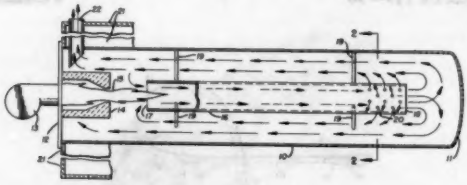
REGENERATIVE HEAT EXCHANGER

John H. Miller, Youngstown, Ohio, assignor to Hy-Way Heat Systems, Inc., Youngstown, Ohio

Filed May 5, 1972, Ser. No. 250,796

Int. Cl. F22b *7/00*

U.S. Cl. 122—33 **5 Claims**



A heat exchanger comprises a cylindrical body having closed ends with means in one end for introducing the products of combustion thereinto and venting the same therefrom. The introduction is by means of a directional nozzle positioned axially of the cylindrical body. A tubular baffle is positioned axially of the cylindrical body in spaced relation to the directional nozzle and the cylindrical body so that the action of the jet-like introduction of the products of combustion into the tubular baffle will recirculate gases from within the cylindrical body in a regenerative effect so as maintain an even temperature on the surface of the cylindrical body which is emerged in a tank of liquid to be heated.

3,776,200

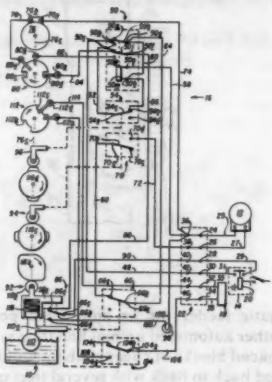
AUTOMATIC SELF-TESTING LOW-WATER CUT-OFF

Sebastian David Tine, Lawrence, and Calvin Rushforth, Andover, both of Mass., assignors to Watts Regulator Company, Lawrence, Mass.

Filed Sept. 1, 1972, Ser. No. 285,638

Int. Cl. F22b *37/42*

U.S. Cl. 122—504 **12 Claims**



A system for preventing "dry-boiler" failures which includes a float mechanism for detecting the water level in a heated reservoir and a device for testing the float mechanism to determine if it is operating properly and for preventing activation of the burner if improper operation is detected.

If the float mechanism is operating properly but the water level is below a pre-determined safety level, then activation of the burner can be prevented and various alarms actuated to notify the operator.

3,776,201

EXHAUST ARRANGEMENT IN A ROTARY-PISTON INTERNAL COMBUSTION ENGINE

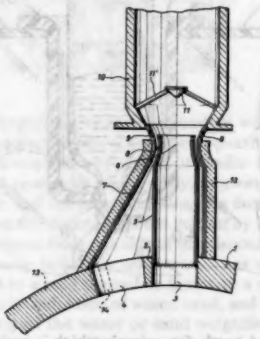
Huschang Sabet, Eduard-Pfeiffer-Strasse 67, Stuttgart, Germany

Continuation-in-part of Ser. No. 137,870, April 27, 1970, Pat. No. 3,736,080. This application Aug. 30, 1972, Ser. No. 284,897

Claims priority, application Germany, Oct. 19, 1971, P 21 51 988.0

Int. Cl. F02b *53/04*

U.S. Cl. 123—8.13 **5 Claims**



In a rotary-piston, internal combustion engine in which pistons rotate about the axis of a cylindrical casing in circum-

ferentially consecutive relationship in sealing engagement with the casing and move angularly relative to each other in such a manner that each pair of circumferentially consecutive pistons defines a combustion chamber of the engine which expands and contracts during rotation, the casing is formed with an intake port for admitting a fuel mixture to the expanding chambers and with an exhaust port and an auxiliary port juxtaposed circumferentially in the direction of piston movement for releasing the spent fuel mixture as combustion gases from the contracting chambers. A conduit extends from the exhaust port outward of the casing and terminates in a tapering, open nozzle. Another conduit extends from the auxiliary port and has a throat portion spacedly enveloping the nozzle so as to form a jet pump or ejector pump therewith, the pressure of the combustion gas discharged from the nozzle drawing additional gas at lower pressure from the combustion compartment.

3,776,202

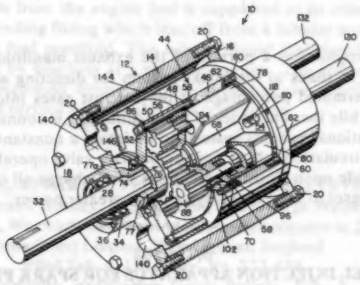
ROTARY ENGINE WITH SUN GEAR DRIVE

Bernardo E. Mesa, 5912 N. Tuxedo St., Indianapolis, Ind.

Filed May 25, 1972, Ser. No. 256,698

Int. Cl. F02b *55/14*

U.S. Cl. 123—8.47 **21 Claims**



An engine comprising a cylindrically shaped rotor, a support frame defining an axis for the rotor, a sun gear concentric with the said axis, a shaft for journal mounting the rotor for concentric rotation about the said axis on the frame and relative to the sun gear, the rotor providing a toroidal chamber concentric with the said axis, and conformingly shaped pistons disposed in the chamber for oscillatory movement about the axis relative to the rotor to define variable volume combustion chambers within the rotor. Planet gears are journal mounted on the rotor and meshed with the sun gear to be driven when there is relative rotation between the rotor and sun gear, and eccentrics drivingly connect each piston to one of the planet gears whereby such relative rotation produces such oscillation of the pistons relative to said chamber.

3,776,203

VARIABLE VOLUME ROTARY VANE PUMP HAVING AN INTEGRAL OPPOSED RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

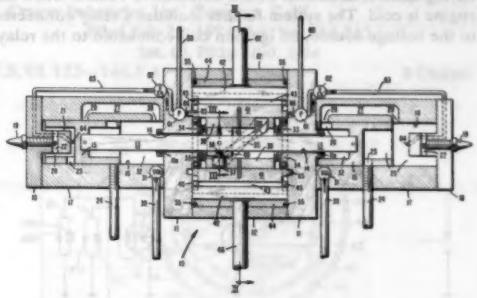
Benjamin Norman Joyce, Sr., Rt. 6, Box 226, Bassett, Va.

Filed Sept. 1, 1972, Ser. No. 285,650

Int. Cl. F02b *75/24, 75/26, 75/32*

U.S. Cl. 123—56 C **9 Claims**

The invention comprises variable volume rotary vane pump and integral opposed reciprocating piston internal combustion engine, which comprises a central housing through the ends of which pass a shaft, to each end of which is connected a piston housed within a cylinder, which together form an internal combustion engine. On the reciprocating shaft is rigidly mounted a cam follower engaging a cylindrical camming device coaxial with the shaft and having an endless camming groove in its internal cylindrical surface. To this camming device is attached a cylindrical sleeve which forms the inner ring of a variable volume rotary vane pump. The vane pump also comprises a unitary volume adjustment block slidably



mounted within the ends of the central housing, with fluid inlet and outlet orifices in the top and bottom thereof. The internal combustion engine includes improved piston and cylinder head designs, and a secondary fluid injection system.

3,776,204

SPEED LIMITING SYSTEMS FOR INTERNAL COMBUSTION ENGINES

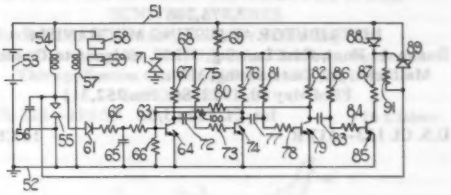
Paul Anthony Harris, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 28, 1971, Ser. No. 157,252

Claims priority, application Great Britain, June 27, 1970, 31,287/70

Int. Cl. F02d *17/00*

U.S. Cl. 123—102 **7 Claims**



A speed limiting system for an internal combustion engine has a switching device in series with the primary winding of an ignition coil, a spark being produced when the switching device is turned off. The speed limiting system comprises a thyristor connected in a circuit across the primary winding and a transistor which is coupled to the switching device and is turned on as a result of opening of the switching device. Current flow is initiated to the gate of the thyristor at a predtermined instant of time after the transistor has been turned on, and is maintained for a predetermined period of time. The thyristor prevents production of a further spark if the switching device is turned off during the predetermined period of time.

3,776,205

IGNITION TIMING CONTROL SYSTEM

Hiroyuki Maruoka, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Jan. 20, 1972, Ser. No. 219,400

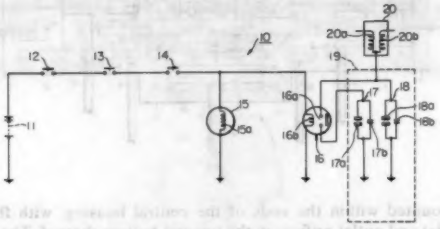
Claims priority, application Japan, July 29, 1971, 46/57013

Int. Cl. F02p *5/04*

U.S. Cl. 123—117 R **3 Claims**

An ignition timing control system for a spark ignited internal combustion engine of an automotive vehicle which engine

includes a carburetor throttle valve. The system includes a d.c. voltage source, a throttle opening device connected to the voltage source for opening the carburetor throttle valve when it is energized. The throttle valve opening device is energized during neutral condition of the automotive vehicle when the engine is cold. The system further includes a relay connected to the voltage source, an ignition coil connected to the relay,



and a distributor including an advancing breaker point connected through the ignition coil to the relay and a retarding breaker point connected to the relay, whereby an electric current path from the voltage source through the relay to the retarding breaker point is established while the carburetor throttle valve is opened by the actuation of the throttle valve opening device for thereby effecting faster warm up of the engine to prevent air pollution.

3,776,206

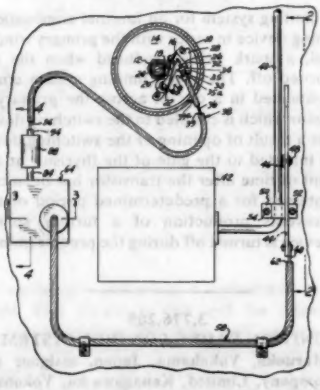
DISTRIBUTOR ADJUSTING MECHANISM

Duane A. Hunt, East Lansing, Mich., assignor to Donnell R. Matthews, Jr., East Lansing, Mich.

Filed May 10, 1972, Ser. No. 252,311

Int. Cl. F02p *5/06*

U.S. Cl. 123—117 R **10 Claims**



Mechanism for adjusting the location of the stationary contact of the breaker points of a distributor in accordance with engine speed during operation of the engine, either automatically in response to speed or throttle opening, or manually by a remote operation from the driver's seat in an automobile.

3,776,207

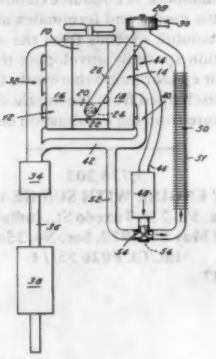
ENGINE CONSTANT RATE EXHAUST GAS RECIRCULATION SYSTEM

Aladar O. Simko, Dearborn Heights, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 3, 1972, Ser. No. 303,660

Int. Cl. F02m *25/00*

U.S. Cl. 123—119 A **10 Claims**



An engine has a portion of the exhaust manifolding connected at times to the intake system for directing at times a predetermined percentage of the exhaust gases into the engine, while the remainder of the manifolding is connected to a conventional exhaust system, to maintain a constant exhaust gas recirculation rate at times, a diverter valve operable at engine wide open throttle conditions to discharge all of the exhaust gases to the exhaust system, for greater power.

3,776,208

FUEL INJECTION APPARATUS FOR SPARK PLUG-IGNITED INTERNAL COMBUSTION ENGINES

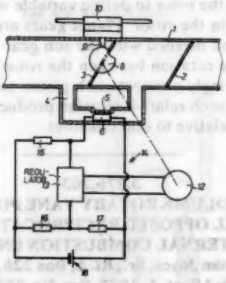
Gerhard Stumpp, Stuttgart-Vaihingen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 28, 1971, Ser. No. 213,101

Claims priority, application Germany, Dec. 28, 1970, P 20 63 963.8

Int. Cl. F02m *7/22*

U.S. Cl. 123—119 R **10 Claims**



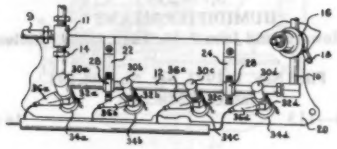
In a fuel injection apparatus the fuel quantities injected in the associated internal combustion engine are determined as a function of the angular position of a throttle member disposed in the air intake tube of the engine. The angular position of the throttle member, in turn, is variable by an electric follower regulator circuit that includes, in a bridge circuit, a temperature-dependent resistance which is disposed in a channel bypassing the throttle member and which changes its resistance as a function of the velocity and density of the intake air passing through said channel.

3,776,209

FUEL INJECTOR MANIFOLD AND MOUNTING ARRANGEMENT

Harry P. Wertheimer, Horseheads, and William A. Peterson, Jr., Corning, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 181,680, Sept. 20, 1971, abandoned.
This application Apr. 5, 1973, Ser. No. 348,360
Int. Cl. F02m *55/00*
U.S. Cl. 123—119 R 1 Claim



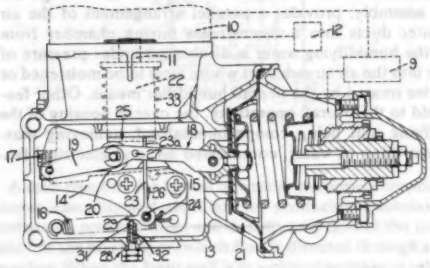
A liquid injector manifold and mounting arrangement wherein the fuel injector is supported in the engine at one end in a cylindrical bore with the aid of a circular seal. The injector extends from the engine and is supported at its other end by an extending fitting which tees off from a tubular common rail liquid fuel manifold. The tubular liquid fuel manifold is supported by brackets at a raised elevation. The connection between manifold fitting and fuel injector also employs a cylindrical surface and circular seal connection.

3,776,210

CONTROL APPARATUS FOR FUEL INJECTION SYSTEM

Gordon Frank Beasley, Birmingham, and George Whitehurst, Solihull, Warwickshire, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Feb. 4, 1972, Ser. No. 223,438
Claims priority, application Great Britain, Feb. 3, 1971, 5,857/71; May 2, 1971, 4,094/71
Int. Cl. F02m *41/00*
U.S. Cl. 123—139 AM 6 Claims



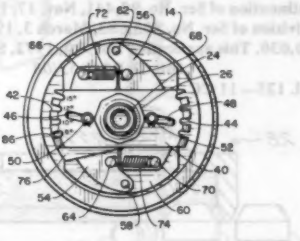
A control apparatus for an internal combustion engine fuel injection system has a cam rotatable between a normal position and a cold-starting position, a cam follower movable in response to engine intake manifold pressure to vary the position of a metering valve control stop in accordance with said pressure and with the cam position, and a latch pivotally mounted on the cam and biased so as to limit movement of said control stop, and hence fuel flow, when the engine is started with the cam in its normal position. The latch is moved by the cam follower to an inoperative position when the engine is running. A damping arrangement slows movement of the latch in response to its biasing means.

3,776,211

ADJUSTABLE LIMIT FOR THE ADVANCE OF AN IGNITION DISTRIBUTOR

Darrell W. Droke, Newport; Donald R. Ochampaugh, Bell, and Andrew G. Krumm, Los Alamitos, all of Calif., assignors to Cragar Industries, Inc., Compton, Calif.

Filed July 22, 1971, Ser. No. 165,243
Int. Cl. F02p *1/00, 5/04*
U.S. Cl. 123—146.5 A 5 Claims



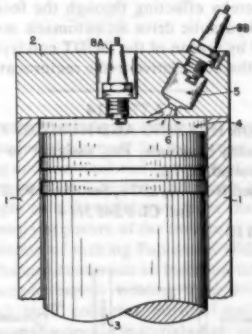
An ignition distributor wherein a drive plate is fixed to the distributor input shaft; a pair of centrifugal weights are pivotally connected to the drive plate and normally biased to the retard position: an advance plate is pivoted with respect to the distributor shaft with the pivoting movement controlled by the centrifugal movement of the weights, the advance plate being connected to the distributor cam which is fixed to the output shaft: a stop plate movable with respect to the advance plate is locatable in various positions with respect thereto, each position establishing a different maximum outward movement of the centrifugal weights.

3,776,212

METHOD FOR EMISSION CONTROL FOR SPARK IGNITION ENGINES

Bela Karlowitz, 1510 Scenery Ridge Dr., Pittsburgh, Pa.

Continuation of Ser. No. 798,716, Feb. 12, 1964, abandoned.
This application Oct. 22, 1970, Ser. No. 83,163
Int. Cl. F02b *19/00*
U.S. Cl. 123—191 SP 16 Claims



Method and apparatus for operating internal combustion spark ignition engines in a manner to reduce the harmful constituents of the exhaust of the engine. The engine is operated, except during peak power requirement, with very lean air-fuel mixtures. The loss of power generally accompanied by lean air-fuel mixtures due to slow burning is avoided by supplying turbulence of proper intensity to the burning mixture. The turbulence is supplied by constructing a combustion chamber divided into main and auxiliary sections joined by an orifice. By selecting the proper orifice size and the proper ratio of the

volumes of the main and auxiliary sections sufficient turbulence can be provided to burn the lean air-fuel mixture within normal crank angles.

3,776,213

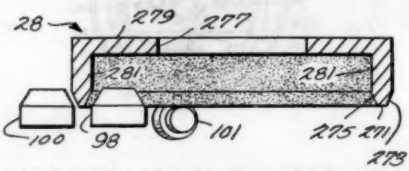
APPARATUS FOR GRINDING TOOTHED FACE MEMBERS

James F. Clarke, and Thomas A. Deprez, both of c/o Gleason Works, 1000 University Ave., Rochester, N.Y.

Continuation of Ser. No. 90,441, Nov. 17, 1970, which is a division of Ser. No. 803,683, March 3, 1969, Pat. No. 3,640,030. This application Nov. 10, 1972, Ser. No. 305,291

Int. Cl. B24b *53/08*

U.S. Cl. 125—11 CC **13 Claims**



Provision is made for an automatic, oscillating feeding motion between cup-shaped grinding wheel and a dresser assembly including rotary dresser wheels, to impart a special undulating or scalloped configuration to the cutting surfaces on the grinding wheel whereby the flow of coolant to and of waste material from the cutting regions will be facilitated, during actual cutting operations.

The present invention further comprises novel structures for an automatic sequence of dressing operations wherein during the dressing steps, an oscillatory feed motion will be automatically provided between the grinding wheel and the dresser assembly through the use of a DCDT (a direct current displacement transducer) connected through a feedback arrangement to a hydraulic drive, and operating in conjunction with mechanical structure. The mechanical structure includes a clutch drive and a cam arrangement, drivingly connected to the spindle for the grinding wheel and operating in conjunction with rotation of the grinding wheel to impart an oscillating or reciprocating motion to the core or armature of the DCDT coil thereby effecting through the feedback arrangement and the hydraulic drive an automatic movement of the grinding wheel by reason of the DCDT coil trying to return to a null position thereof relative to the reciprocating core.

3,776,214

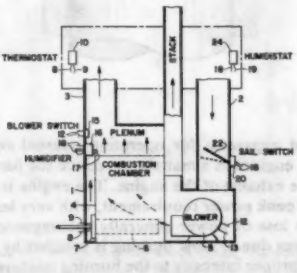
COMBINATION HEATING AND HUMIDIFYING SYSTEM

John R. Coffman, Scottdale, Pa., assignor to Lewbill Industries, Inc., Scottsdale, Pa.

Filed Nov. 16, 1971, Ser. No. 199,258

Int. Cl. F24f *3/14*

U.S. Cl. 126—113 **1 Claim**



A normally shut off, electrically operated, spray humidifier is provided for humidifying a flow of air produced by a furnace blower controlled by a heat-responsive switch that is independent of the thermostat circuit which controls the furnace burner. The humidifier is connected in the thermostat circuit through a normally open switch that is closed only when a sail, operatively connected with the switch, is moved by the flow of air produced by the blower. Consequently, the humidifier does not start to operate until the flow of air begins, but the humidifier is shut off when the burner is turned off.

3,776,215

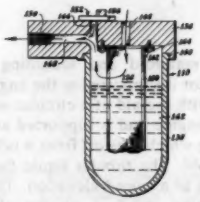
HUMIDIFIER MEANS

Arthur G. Howard, and John P. McHugh, both of Indianapolis, Ind.

Filed Nov. 1, 1971, Ser. No. 194,191

Int. Cl. F24h *3/00*

U.S. Cl. 126—113 **16 Claims**



A humidifier installation which projects water in minute droplet form into the associated air stream duct, without prior evaporation of the water, and permitting all components except the discharge nozzle to be spaced away from the air duct and away from all the heated air, thus avoiding a main source of humidifier clogging and/or other inefficiency and ineffectiveness. Additional features include an adjustable means for getting liquid deodorant or disinfectant into the air stream which is used to draw the humidifying water into the duct; and the nozzle assembly, which achieves the flow of humidifying water under vacuum in response to flow of air through the nozzle assembly, provides a parallel arrangement of the air and water ducts into a downstream mixing chamber from which the humidifying water is discharged under pressure of that air into the air stream duct whose air is to be moistened or otherwise treated by the overall humidifier means. Other features add to the overall operativity, the overall housing of the humidifying unit being compartmentalized, achieving maximal separation of water, compressed air, and electrical features.

3,776,216

SELF-CLEANING OVEN

Rudolf Pirker, Noremberg, and Roland Kelchner, Furth/Bayern, both of Germany, assignors to Licentia Patent-verwaltungs G.m.b.H., Frankfurt am Main, Germany

Filed Nov. 9, 1972, Ser. No. 304,951

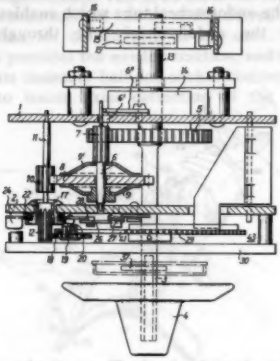
Claims priority, application Germany, Nov. 9, 1971, P 21 55 570.4

Int. Cl. F24c *15/02*

U.S. Cl. 126—197 **4 Claims**

In apparatus for automatically heat-cleaning the interior surfaces of an oven having a locking member for locking the oven door during the cleaning process; a timer for controlling the cleaning operation; a blocking device for maintaining the door in its locked position during the operation; and a bimetal

control device connected to the timer and the blocking device for actuating the blocking device and for preventing the timer



from being reset after the cleaning operation has begun and while the temperature in the oven remains above a certain value.

3,776,217

NURSING BOX FOR BABIES OR SIMILAR PURPOSES

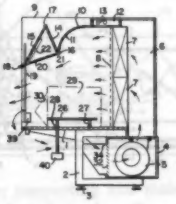
Piet van Galen, and Johannes G. Th. van Nes, Jr., both of Heerhugowaard, Netherlands, assignors to Pielkenrood-Vinitex N.V., Assendelft, Netherlands

Filed Dec. 4, 1970, Ser. No. 95,035

Claims priority, application Netherlands, Dec. 18, 1969, 6918989

Int. Cl. A61b *19/00*

U.S. Cl. 128—1 B **12 Claims**



A dust-free box for babies or similar purposes comprising a blower assembly and air filters for producing a substantially horizontal, non-turbulent and dust-free air flow in the interior space of the box proper, which flow is directed through a front opening. When the front wall is in a closed position, a relatively small slot remains open to provide this opening. When the front wall is in an open position, the inner surfaces thereof are kept out of contact with the outside air. Auxiliary means inside the box do not disturb the dust-free condition therein and/or are maintained dust-free during use and when not in use.

3,776,218

APPARATUS FOR DRAWING LIQUID SUCH AS BLOOD

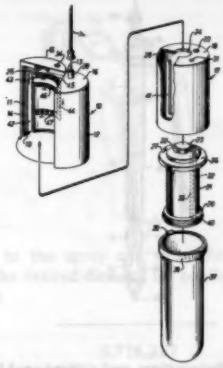
Jan Axel Svensson, Bredbacks vag 7, Bjarred, Sweden

Filed Dec. 27, 1971, Ser. No. 212,542

Int. Cl. A61b *5/14*

U.S. Cl. 128—2 F **5 Claims**

In an apparatus for drawing liquid, especially for drawing blood, there is provided a stationary piston and a longitudinally extending container, open at one end, which receives the piston and is axially displaceable in relation to the piston



to form a pump together therewith. A communication is provided through the piston from an inlet pipe to the space in the container closed off by the piston.

3,776,219

CERVICAL SCRAPER

Paul A. Brown, Ridgewood, N.J., assignor to Metpath Inc., Hackensack, N.J.

Filed Sept. 15, 1972, Ser. No. 289,674

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 B **4 Claims**

A cervical scraper unit is provided and particularly for utilization by the female herself for collecting a cytological sample, including endocervical and exocervical cells as well as exudate, from the vagina or cervix, which unit is arranged to protect the sample as it is withdrawn from the vagina, thus avoiding unnecessary exposure of the sample to contaminants. An improved method of making Pap smear slides is also disclosed herein. The unit comprises an insertion tube containing an elongated sample handle holding a generally conically shaped, rounded apex collector portion made of a soft, resilient, fluid-resistant, porous material, such as polyurethane foam, and having a plurality of flexible petal-like appendages which serve to protect the collector portion prior to and after the sample is obtained.

3,776,220

DIAGNOSTIC SWAB WITH STORED CULTURE MEDIUM

Frank Monaghan, 591 South St., Glendale, Calif.

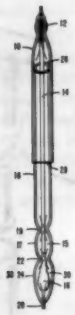
Filed May 9, 1972, Ser. No. 251,658

Int. Cl. A61m *35/00*

U.S. Cl. 128—2 W **4 Claims**

This invention relates to a disposable device for housing diagnostic swabs or similar devices comprising a plastic tube

containing medium in a breakable sealed section, a swab in a second section adapted so that the swab can break the seal



separating it from the medium and a third seal located on the opposite side of the swab from the medium.

3,776,221

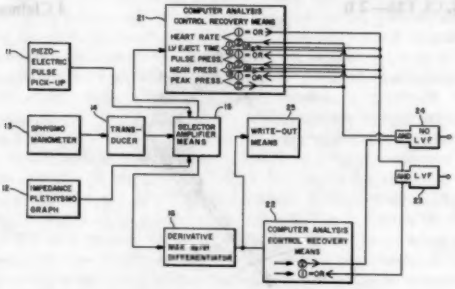
DETECTING IMPAIRED HEART MECHANICAL PERFORMANCE AND APPARATUS THEREFOR

Kevin M. McIntyre, 1400 V.F.W. Pky., Jamaica Plain, Mass.

Filed Apr. 2, 1971, Ser. No. 130,572

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 R **7 Claims**



A pressure-sensitive device contacts the skin of a patient near an artery noninvasively to provide a signal representative of systemic arterial blood pressure both before and after a Valsalva Manoeuvre. This blood pressure signal is differentiated, and the changes in amplitude before and after the Valsalva Manoeuvre detected to indicate potential left ventricle failure when the change is less than a predetermined value. Signals representative of pulse pressure, the means systemic arterial blood pressure, heart rate and left ventricular ejection time are also provided to facilitate detection of impaired mechanical performance of the heart.

3,776,222

FIBER OPTIC ENTUBATOR AND METHOD OF ENTUBATION OF THE TRACHEA THROUGH THE NASOPHARYNX

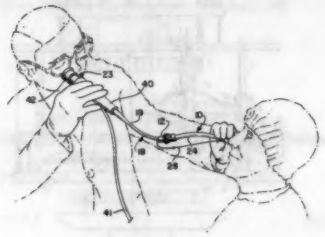
Joseph F. Smiddy, Bethesda, Md., assignor to Anthony M. Lurosso, Bethesda, Md., a part interest

Filed Dec. 23, 1971, Ser. No. 211,388

Int. Cl. A61b *1/06*

U.S. Cl. 128—6 **10 Claims**

An entubator for an endotracheal tube which includes a coherent flexible fiber optic bundle which can be positioned within the central cavity or lumen of the endotracheal tube for viewing the anatomy of a patient as the endotracheal tube advances through the patient during the insertion procedure. The entubator also includes a means for directing the course of travel of the endotracheal tube which enables the operator to navigate the endotracheal tube through anatomical



passageways made visible by the fiber optics bundle. The fiber optic bundle and the means for directing the course of travel enable the entubation of an endotracheal tube through the nasopharynx of the patient.

Method of entubing an endotracheal tube through the nasopharynx.

3,776,223

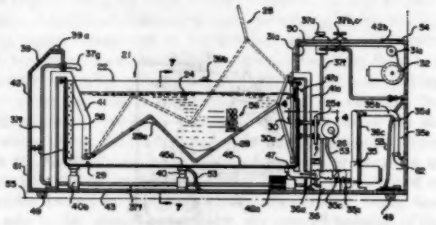
HYDROTHERAPY BATH WITH WAVE ENERGY PRODUCING MECHANISM

Harold Everett Yeager, 4214 Central Ave., Sioux City, Iowa; Richard F. Krage, 47 W. Geary St., Stockton, Calif., and Benjamin Melvin Wilhite, San Mateo, Calif.

Filed Sept. 21, 1971, Ser. No. 182,395

Int. Cl. A61h *9/00*

U.S. Cl. 128—66 **16 Claims**



A hydrotherapy bath for treatment of a patient by immersion. The bath includes a tank of sufficient volume to hold a treating liquid in which an arm, leg, or the entire body of a patient may be immersed. The tank may be either free floating or mounted at a fixed position. The patient is suspended in the treating liquid by a device which is supported independent of the tank and is therefore free floating with respect to the tank.

3,776,224

DYNAMIC CERVICAL SUPPORT

Harold A. McFarland, Salt Lake City, Utah, assignor to Medical Development Corporation, Salt Lake City, Utah

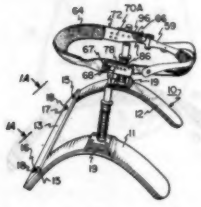
Filed Feb. 24, 1972, Ser. No. 228,941

Int. Cl. A61h *1/02*

U.S. Cl. 128—75 **8 Claims**

An improved dynamic cervical support supplying constantly sustained traction to a patient's head, yet insuring essentially full normal mobility of the head. The shoulder harness of the

device include rigid shoulder straps or arcuate shoulder members which, though made of rigid material, can be adjusted about points of attachment to accommodate a variety of shoulder configurements. The head frame or support itself is of hinged construction and can be easily altered as to longitudinal dimension for the comfort of the user. Compression spring means provides the needed traction, and spring guides and/or mounts maintain ball-and-socket connection to their mountings, to insure axial deflection of the compression



springs used in an advantageous manner. Larger spring members journal interior support structure and provide for a degree of lateral flexibility, as well as offering a restoring force to such interior support structure. Articulative joints at selected points in the structure insure wide versatility of use and mobility even though traction is constantly maintained. A side hinge and hook construction provide for selective opening and closure of the lower jaw member of the head frame to the rear head support thereof.

3,776,225

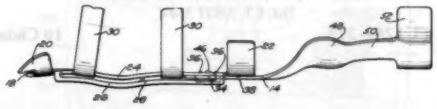
ARM SPLINT

Robert Lonardo, 20 Fiore St., Providence, R.I.

Filed July 12, 1971, Ser. No. 161,749

Int. Cl. A61f *5/10*

U.S. Cl. 128—77 **2 Claims**



An arm splint for supporting and maintaining a patient's forearm immobile when desired, such as, for example, when receiving an intravenous injection, said splint comprising an elongated strip terminating below but adjacent the elbow at one end and terminating adjacent the middle phlangeal joint of the fingers at the other end and having upwardly extending side walls at said opposite ends to prevent undesirable lateral movement of the arm and fingers. Means for securing the splint to the arm of the user are provided, said means being adjustable lengthwise with respect to the splint on a sliding track. The splint further comprises a second strip that may be adjustably and removably secured to the elbow end of the first strip when it is desired to maintain the user's arm completely straight.

3,776,226

SPRAY APPLICATOR

Frank Lewis Triplett, 227 Upshur St., N.W., Washington, D.C.

Filed Nov. 21, 1972, Ser. No. 308,572

Int. Cl. A61m *35/00, 11/00;* **B05b** *17/00*

U.S. Cl. 128—172 **7 Claims**

An applicator for liquid spray to the crotch between two toes comprises in one embodiment a spray can and a spring instrument for holding the toes apart to concentrate the spray in and confine it to the crotch region. The spring instrument may

be attached to the spray can near the spray spout, thus establishing the desired distance for confining the spray to the crotch region.

3,776,227

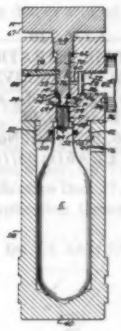
PORTABLE HYPERVENTILATION RELIEVING DEVICE

Isadore Pitesky, 4001 Linden Ave., Long Beach, Calif., and James B. Barsby, 6477 Atlantic Ave., Long Beach, Calif.

Filed Jan. 31, 1972, Ser. No. 222,048

Int. Cl. A61m *15/00*

U.S. Cl. 128—203 **5 Claims**



The hyperventilation relieving device includes a carbon dioxide cartridge holding housing and an inhaler tube and valve-supporting head in threaded engagement in such a manner that as they arerotated relative to one another an orifice-defin1ng prong may be forced to puncture the cartridge. Puncturing of the cartridge results in the flow of carbon dioxide to the inhaler tube at a metered rate, which rate is determined by the transverse cross section of the orifice. A manually operated valve mounted on the head may be selectively placed in a first position to permit metered flow of carbon dioxide to the inhaler tube or in a second position to obstruct flow of carbon dioxide from the cartridge. The housing includes safety vent means to automatically bleed all carbon dioxide from the cartridge prior to the housing and head being separated from one another.

3,776,228

PORTABLE SELF-CONTAINED ELECTRICAL CARDIOMETRIC DEVICE WITH THREE FIXED-POSITION NONUNIFORMLY SPACED INPUT PROBES

Herbert J. Semler, 2330 N.W. Flanders, Portland, Oreg.

Continuation of Ser. No. 36,065, May 11, 1970, abandoned.

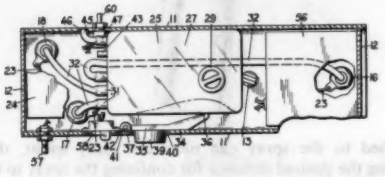
This application Sept. 20, 1971, Ser. No. 181,862

Int. Cl. A61b *5/04*

U.S. Cl. 128—2.06 R **5 Claims**

A portable self-contained electrical cardiometric device employable for the quick monitoring and indicating of a heart-

produced electrical signal in a person's body. The device includes three specially positioned electrical probes which are for electrically contacting a person's body to detect such a signal, a battery-powered electronic amplifier connected to these probes for amplifying a detected signal, and a suitable



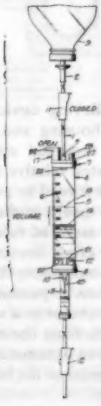
display or indicating unit for following the instantaneous amplitude of an amplified signal. The probes include fluid passages that communicate with a pump and a fluid reservoir in the device from which a conductive fluid may be ejected to enhance the electrical contact between the probes and a person's skin.

3,776,229

MEDICAL LIQUID ADMINISTRATION SET FOR RATE OR VOLUME DELIVERY

Charles J. McPhee, Sylmar, Calif., assignor to American Hospital Corporation, Evanston, Ill.

Filed Nov. 26, 1971, Ser. No. 202,505
Int. Cl. A61m *05/16*
U.S. Cl. 128—214 C **14 Claims**



A parenteral liquid administration set which is readily changeable between delivering liquid at measured "rate" through a drip chamber that has a constant liquid level, and delivering liquid from the chamber in a measured "volume" with a progressively lowering liquid level. A valve system on a top of an enlarged semi-rigid measuring chamber functions to selectively change between "rate" and "volume" delivery. In one version there is also a secondary drip chamber below the enlarged semi-rigid measuring chamber so the set can simultaneously indicate "rate" and "volume" delivery.

3,776,230

METHOD OF RAPIDLY RESHAPING THE CORNEA TO ELIMINATE REFRACTIVE ERRORS

Charles W. Neefe, Box 429, Big Spring, Tex.

Continuation-in-part of Ser. No. 24,904, April 7, 1972, which is a continuation-in-part of Ser. No. 45,333, June 11, 1970, abandoned, which is a continuation-in-part of Ser. No. 562,002, May 16, 1966, abandoned. This application Apr. 18, 1973, Ser. No. 352,227
Int. Cl. A61m *7/00*
U.S. Cl. 128—260 **9 Claims**

A method of correcting refractive errors of the eye by changing the shape of the cornea by softening the corneal tissue by the application of heat and reshaping the convex cornea to the curvature of the surface of a concave mold applied to the cornea.

ERRATUM

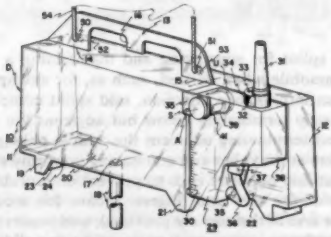
For Class 128—271 see:
Patent No. 3,776,001

3,776,231

URINARY DRAINAGE APPARATUS

Le Grand K. Holbrook, and Ronald D. Rowley, both of Salt Lake City, Utah, assignors to Medical Development Corporation, Salt Lake City, Utah

Filed May 22, 1972, Ser. No. 255,767
Int. Cl. A61f *5/44*
U.S. Cl. 128—275 **10 Claims**



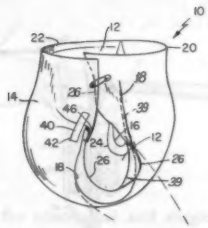
A urinary drainage system and structure providing an initial or receiving container and also a sump or storage container. The two containers are inter-connected, with the first being pivotal relative to the second so that the contents of the receiving container may be emptied into the storage container. Pivotal structure cooperating with the containers serves as journaling means and also inter-communication means to accommodate fluid flow, whether the receiving container is in its normal or tilted condition. Self-adjusting securement means is provided so the structure may be leveled regardless of the supporting structure. Independent drainage means for the containers are provided.

3,776,232

DIAPER WITH THIGH-OPENING CLOSURE MEANS

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed June 21, 1971, Ser. No. 155,008
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **19 Claims**



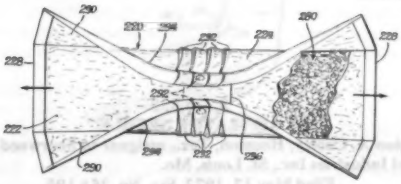
A diaper having a pair of end edges and a pair of sides connecting the end edges, and including, front and back waistband portions at the end edges with a crotch portion therebetween. The diaper has adhering means positioned below the waistband portion but above the bottom of the crotch section of the diaper and adjacent both of the connecting sides to tighten the diaper about an infant's legs after placement of the diaper about the infant.

3,776,233

EDGE CONTOURABLE DIAPER

Charles H. Schaar, Lake Zurich, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed May 17, 1971, Ser. No. 144,032
Int. Cl. A61f *13/16*
U.S. Cl. 128—287 **6 Claims**



A contourable diaper including, a pleated fluid pervious cover sheet and a pleated fluid impervious back sheet secured to each other adjacent the lateral and longitudinal edges of the diaper. An absorbent pad is positioned intermediate the cover and back sheets and extends at least throughout the crotch region of the diaper. The diaper is transformed from a generally planar and rectangular shape to an arcuate configuration responsive to longitudinal expansion of the cover and back sheets, and the longitudinal edges of the sheets bow inwardly in at least the central region of the diaper to generally conform to the contour of an infant's body.

3,776,234

DISPOSABLE DIAPER WITH ADHESIVE TAPE TAB FASTENERS

Raymond M. Hoey, Barrington, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 17, 1971, Ser. No. 125,036
Int. Cl. A41b *13/02*
U.S. Cl. 128—287 **11 Claims**

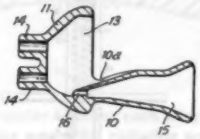
A disposable diaper having adhesive tape tab fasteners affixed thereto to secure the diaper around an infant. Each tape tab comprises a strip of adhesive tape affixed along an edge of the diaper. At least a portion of each tape strip extends inwardly from that edge to overlie the inside surface of the diaper, with the adhesive side of the strip of tape facing the inside surface of the diaper. A first part of the portion of the tape strip overlying the inside surface of the diaper is adhesively attached thereto to hold the tape tab relatively flat against the inside surface of the diaper, so the tab will not protrude from the diaper and interfere with manufacturing, folding, and packaging the diaper. A second part of the portion of the tape strip overlying the inside surface of the diaper is free of attachment to the diaper, the adhesive on the second part being normally covered by a release sheet prior to use of the tab in fastening the diaper around an infant.

3,776,235

PORTABLE FEMALE URINAL

Harry Ratcliffe, and Elsie Ratcliffe, both of Ightenhill Farm, Park Ln., Burnley, England

Continuation of Ser. No. 77,025, Sept. 30, 1970, abandoned, which is a continuation of Ser. No. 710,889, March 6, 1968, abandoned. This application Dec. 27, 1971, Ser. No. 211,905
Claims priority, application Great Britain, Mar. 9, 1967, 11,103/67
Int. Cl. A61f *5/44*
U.S. Cl. 128—295 **7 Claims**



The device for female incontinence comprises a collection and funneling container, a retaining member fixed to said container and adapted for removable vaginal insertion. The retaining member is positioned with respect to said container in a manner such that when the member is inserted into the vagina, the container is disposed at the urethral orifice so as not to contact said orifice. The container serves to collect and funnel urine discharged from said orifice.

3,776,236

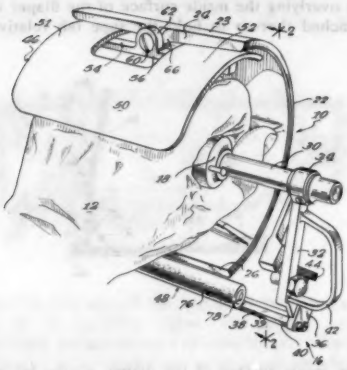
SAFETY GUARD FOR DERMATOME INSTRUMENT

Burton David Brent, 1110 Cleveland St., Evanston, Ill.

Filed Feb. 25, 1972, Ser. No. 229,390
Int. Cl. A61b *17/322*; B26b *29/02, 1/00*
U.S. Cl. 128—305 **7 Claims**

A surgical instrument for skin grafting or a dermatome having a safety guard means on the shoe or drum thereof located

to protect a surgeon's hand from the cutting blade during use of the instrument. The safety guard means is operative to protect the operator's exposed wrist tendons or tendons and skin across the knuckles and dorsum of the hand grasping the grip or handle of the instrument.

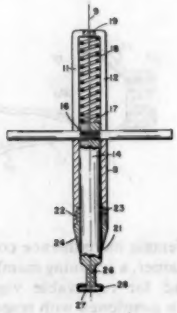


3,776,237

SURGICAL TOOL AND METHOD OF PROVIDING A SURGICAL OPENING

J. Donald Hill, and Thomas C. Robinson, both of San Francisco, Calif., assignors to Tecna Corporation, Emeryville, Calif.

Filed May 11, 1972, Ser. No. 252,482
Int. Cl. A61b *17/32*
U.S. Cl. 128—305 **5 Claims**



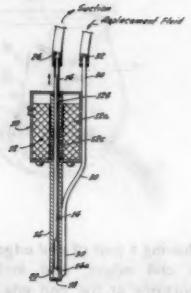
A surgical tool especially for providing a circular opening in a wall such as that of a blood vessel has an outer, circular-cylindrical casing having a longitudinal axis and having a circular knife edge at one end. A plunger is axially movable within the casing by a rod extending transversely through the plunger and through longitudinal slots in the casing. A spring, abutting the end of the plunger and an end of the casing, urges the plunger toward the one end of the casing. A reduced stem at an adjacent end of the plunger carries a circular disk anvil of greater diameter than the knife edge and in the path thereof.

3,776,238

OPHTHALMIC INSTRUMENT

Gholam A. Peyman, Chicago, Ill., and Nicholas A. Dodich, Marina Del Rey, Calif., assignors to The Regents of the University of California, Berkeley, Calif.

Filed Aug. 24, 1971, Ser. No. 174,349
Int. Cl. A61f *9/00*; A61b *17/32*; A61m *1/00*
U.S. Cl. 128—305 **3 Claims**



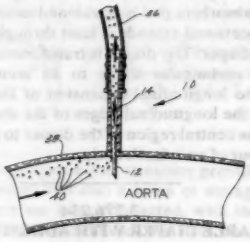
An ophthalmic instrument is provided for removing vitreous and fibrous bands from the retina of an eye. The instrument consists of two tubes mounted coaxially within one another, and with an opening adjacent the end of the outer tube. Cutting of the vitreous and fibrous bands is performed by a chopping action set up by the sharp end of the inner tube against the inner surface of the end of the outer tube. The vitreous and fibrous bands which are trapped in the mouth of the instrument are chopped and removed by suction by way of the inner tube. In the instrument to be described, the vitreous is replaced continuously by a saline solution, for example, which is introduced into the instrument by way of a small infusion tube.

3,776,239

ASPIRATOR NEEDLE

Denton A. Cooley, Houston, Tex., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed May 17, 1972, Ser. No. 254,195
Int. Cl. A61b *17/34*
U.S. Cl. 128—347 **7 Claims**

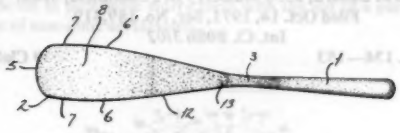


An aspirator needle for use in open-heart surgery during cardiopulmonary bypass to reduce the risk of air entrapment in the aorta. The needle consists of a cannula provided with a pointed end and an axial slot in the wall thereof extending substantially the length of the cannula, and a hub configured to connect to a source of suction via a connecting tube.

3,776,240
OBSTETRICAL INSTRUMENT

Edgar F. Woodson, 2229 St. Louis Ave., St. Louis, Ill.

Filed Feb. 4, 1972, Ser. No. 223,459
Int. Cl. A61b 17/42
U.S. Cl. 128—361 2 Claims

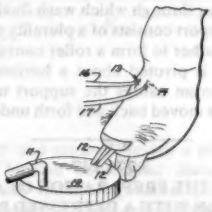


An instrument for obstetrical and surgical use being of general dipper form having a relatively short handle, a thin, rounded edge plate-like head and an intermediate narrow section between said head and said handle; said head being longitudinally arcuated and tapering rearwardly toward said intermediate section.

3,776,241
SYSTEM AND METHOD FOR CONTROLLING VASCULAR RESPONSES

James H. Magilton, and Curran S. Swift, both of Ames, Iowa, assignors to Iowa State University Research Foundation, Inc., Ames, Iowa

Filed Aug. 13, 1971, Ser. No. 171,575
Int. Cl. A61f 7/00
U.S. Cl. 128—400 5 Claims



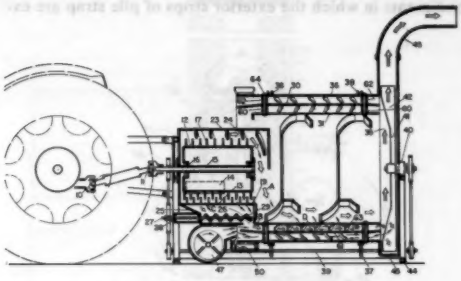
A method and a system are disclosed for producing changes in systemic arterial blood pressure, cerebrospinal fluid pressure and heart rate; as well as producing selective brain hypothermia in animals by irrigating the nasal mucosa.

3,776,242
COMBINATION THRESHING AND SEPARATING MACHINE

Amir U. Khan, Okemos, Mich., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Nov. 26, 1971, Ser. No. 202,119
Claims priority, application Philippines, Dec. 2, 1970, 12001
Int. Cl. A01f 12/20
U.S. Cl. 130—27 T 5 Claims

This invention relates to a combined threshing machine and rotary separator for grain crops. The threshing and separator sections are disposed in axial alignment, with the proximal ends in substantial overlapping relation. Straw disposal means is located adjacent the distal end of the rotary separator section. Grain is removed on a conveyor at the bottom of the threshing section adjacent the proximal end of the separator. A blower is located below the conveyor outlet. The rotary separator section comprises three concentric cylindrical shells rigidly connected together for unitary rotation, the innermost shell being wholly perforated and provided with tumbling louvers on its inner surface. The intermediate shell is partially

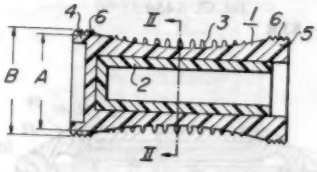


perforated and provided with deflecting louvers oriented to move threshed materials towards the perforated portion. The outermost shell is imperforate and has louvers on its inner surface oriented to move grains towards the blower and the grain trough disposed below the bottom side of the end of the outermost shell adjacent to the blower.

3,776,243
HAIR CURLER

Tomomi Oshita, and Minoru Suzuki, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 9, 1972, Ser. No. 251,789
Claims priority, application Japan, May 14, 1971, 46/38260
Int. Cl. A45d 2/12
U.S. Cl. 132—33 R 5 Claims



A hair curler has curler bobbins each adapted to accumulate heat from heating means for radiating accumulated heat to hair wound on the bobbin so that hair is set in curled state. The curler bobbin includes an inner sleeve and an outer sleeve which has its minimum outer diameter at longitudinal intermediate portion which gradually increases toward opposite ends. A plurality of projections are formed on peripheral outer surface of the outer sleeve to facilitate winding of hair thereon and prevent hair from becoming loosened.

3,776,244
NON-SLIP RETENTION MEANS FOR USE ON A WEARER'S HEAD

Willis Ema Morgan, 4225 Buchman Ave., Forth Worth, Tex.

Division of Ser. No. 58,435, July 27, 1970, abandoned. This application Oct. 19, 1971, Ser. No. 190,648
Int. Cl. A45d 8/00
U.S. Cl. 132—46 R 7 Claims

A non-slip head gear and a retainer employing the same, the head gear being characterized by a cap means having a hook strip on its interior surface with its tiny hooks protruding interiorly for engagement with the hair of the wearer and having

an exterior strip of pile strap with its loops protruding exteriorly for receiving mating hook strips that are connected with other elements such as a retainer body. The retainer body is characterized by net material that is elastic along the fiber of the net and is even more elastic along the bias of the fiber for conforming to irregular contours. Also disclosed are preferred embodiments in which the exterior strips of pile strap are ex-

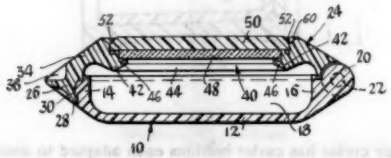
tensive enough to allow attachment of a wide variety of hook strip configurations; wherein a plurality of hook strips are fixedly disposed at predetermined locations for a predetermined hook strip configuration; and wherein neck straps are attached to the rear of the neck, the neck straps having mating hook strips and pile straps on their respective free ends.

3,776,245

MOLDED PLASTIC COMPACT WITH MIRROR MEMBER

Thomas A. Hayes, Westport, Conn., and Theodore R. Krause, Ridgewood, N.J., assignors to VCA Corporation, Greenwich, Conn.

Filed Mar. 22, 1972, Ser. No. 237,118
Int. Cl. A45d *33/00*
U.S. Cl. 132—83 R **5 Claims**



A compact for holding a cosmetic product, said compact including a molded plastic case having a cover which is provided with an opening of appreciable expanse. The cover is molded with a sloped, outwardly-facing thin-walled yieldable shoulder which extends along the inside of inner edge portions of the opening so as to engage marginal portions of a mirror member which is disposed in the cover opening. The thin-walled shoulder positions of the mirror member, and can yield inward slightly in response to inward force applied to the member. This force is exerted by an ornamental cover plate that is also disposed in the opening of the cover and against the outside of the mirror member, being secured to the cover by a sonic welding operation. During such operation the mirror member is tightly clamped against the positioning shoulder of the cover, which yields slightly as a consequence of the assembly operation. By the above construction, all looseness of the mirror member is prevented, as well as the likelihood of breaking or damage to the latter.

ERRATUM

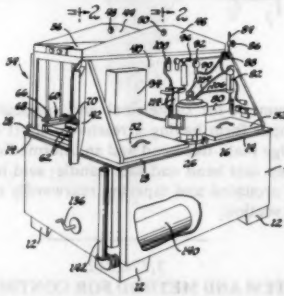
For Class 132—89 see:
Patent No. 3,775,848

3,776,246

WASHING MACHINE WITH OSCILLATING WORK SUPPORT

Thomas B. Ballard, 2550 Mulberry Dr., Southfield, Mich.

Filed Oct. 14, 1971, Ser. No. 189,419
Int. Cl. B08b *3/02*
U.S. Cl. 134—153 **9 Claims**



A washing machine for workpieces includes a heated fluid sump tank having sides formed of inclined plates which meet at their lower edge and a manually rotatable screw conveyor disposed above the bottom edge to force sludge up a standpipe to clean the tank. The cover for the tank is hinged to the tank at one edge and supports a submersible pump so that it projects downwardly into the fluid in the sump. A washing compartment formed on the upper side of the cover includes a plurality of spray pipes through which wash fluid is forced by the pump. A work support consists of a plurality of rollers arrayed parallel to one another to form a roller conveyor section. The conveyor section is pivoted about a horizontal line and an oscillatory mechanism causes the support to reciprocate so that a workpiece is moved back and forth under the spray.

3,776,247

PROCESS FOR THE PREPARATION OF A CRUDE-OIL COMPOSITION WITH A DEPRESSED POUR POINT

Johannes H. Choufoer; Willem J. Van Kerkvoort; Pieter H. Van der Meij, and Thomas Schrueder, all of Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

Filed July 1, 1968, Ser. No. 741,317
Claims priority, application Netherlands, July 7, 1967, 6709453
Int. Cl. F17d *1/16*; C10l *1/18*
U.S. Cl. 137—13 **6 Claims**

A method of transporting waxy crudes through conduits at reduced friction and preventing wax separation or precipitation so as to inhibit plugging and flow restriction and improve the pour point properties of the crude by adding to such waxy crudes a small amount of a polymeric material containing aliphatic hydrocarbon side chains of at least 14 carbon atoms.

This invention relates to decreasing friction loss in flowing waxy crudes through conduits, generally over great distances but also over short distances such as in well fracturing processes and also to improving the pour point of waxy crudes. More particularly, the invention is directed to crude oil compositions comprising a waxy crude oil and fractions thereof and polymers having aliphatic hydrocarbon side chains with at least 14 carbon atoms, so as to reduce the pour point, prevent wax separation and reduce its friction loss due to flow through pipelines over great distances and short distances.

3,776,248

PIPELINE TRANSPORTATION OF WAXY PRODUCTS

Paul E. Titus, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 10, 1971, Ser. No. 170,563
Int. Cl. F17d *1/16*; B65g *53/04*
U.S. Cl. 137—13 4 Claims

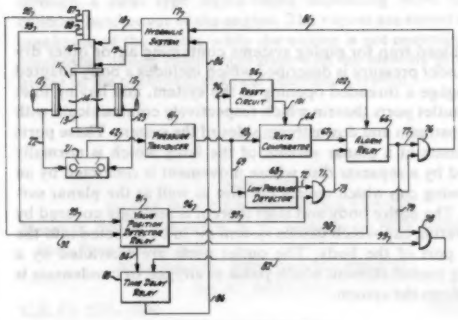
An improved method of pipeline transporting highly waxy crude oil in pumpable slurry form with the aid of a particular class of non-ionic surfactants.

3,776,249

PIPELINE FLOW CONTROL SYSTEM AND METHOD

Rodney A. Wailes, Houston, and Sidney Allan Ottenstein, Spring, both of Tex., assignors to M & J Valve Company, Houston, Tex.

Filed July 14, 1972, Ser. No. 272,012
Int. Cl. F16k *31/00*
U.S. Cl. 137—14 44 Claims



A piping system and method having a plurality of power operated valves located substantial distance apart. The method continuously monitors pressure conditions at each valve and senses abnormal pressure conditions indicative of a line break. When such abnormal pressure conditions occur, valves on opposite sides of the break automatically close. Pressure sensing continues and if after closing certain predetermined pressure requirements are met, the valves are automatically opened. Where the system includes looped or parallel branch lines connected at their ends to upstream and downstream portions of the main lines, valves in both branch lines and also adjacent valves in the main line may close, after which all of the valves will be automatically opened, except the valves that isolate the break. Also apparatus for carrying out the method, including means for monitoring pressure conditions and means for effecting automatic closing and opening of the valve responsive to predetermined pressure conditions.

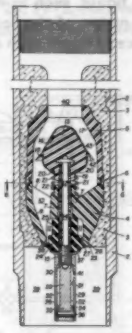
3,776,250

FLOAT COLLAR WITH DIFFERENTIAL FILL FEATURE

Lloyd C. Knox, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Apr. 13, 1972, Ser. No. 243,726
Int. Cl. F16k *15/06*; E21b *33/00*
U.S. Cl. 137—71 8 Claims

A valved collar for allowing a pipe string to fill up as it is lowered in a bore hole while controlling the rate of fill up through a differential fill feature, utilizes a valve plunger in a valve body with the plunger opening against spring means and



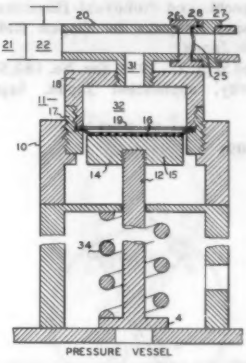
having an elastomeric collar intermediately located on the plunger shaft for allowing fill up to occur above a predetermined differential pressure.

3,776,251

ANTI-LEAKAGE SYSTEM FOR BOILER SAFETY VALVES

Abraham Trubman, Philadelphia, Pa., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 26, 1972, Ser. No. 266,182
Int. Cl. F16k *17/16*
U.S. Cl. 137—71 6 Claims



The invention disclosed herein relates to an improved safety valve for high pressure steam operations and includes an auxiliary system for operating high pressure steam to the safety valve main spring to prevent leakage of a safety valve with its attendant noise and condensate.

3,776,252

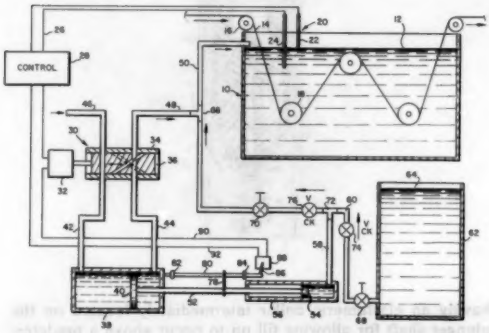
SELF-REGULATING SYSTEM FOR MIXING LIQUIDS

Harold R. Wilcox, Maynard, Mass., assignor to Riggs & Lombard, Inc., Maynard, Mass.

Filed Dec. 3, 1971, Ser. No. 204,538
Int. Cl. G05d *9/12*; F16k *19/00*
U.S. Cl. 137—99 1 Claim

A system is provided for mixing,on demand, two or more liquids at a constant ratio with one of the liquids serving to

pump one or more of the other liquids into the system. The piston of one cylinder is drivingly connected to the piston of another cylinder, the first cylinder being connected to a source of pressurized liquid, such as water,which serves as a driving force for the piston of the second cylinder which is connected to the source of liquid,such as a detergent, whereby



a constant ratio of liquids is maintained. Conduits are provided to mix the discharges of the two cylinders prior to delivery to a chamber such as a washing tank for a running textile web. A control system is provided for actuating the pumping system to maintain a constant level of mixed liquids in the chamber.

3,776,253

MEANS FOR PREVENTING DEFORMATION OF STEEL TUBES

Masaya Yamaguchi, and Nobuyuki Hironaka, both of Fukuyama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 22, 1971, Ser. No. 182,593

Claims priority, application Japan, Sept. 29, 1970, 45/96086

Int. Cl. F16l *9/04*

U.S. Cl. 138—109 **5 Claims**

A means for preventing deformation of steel tubes comprises a plurality of intersecting beams respectively provided with a fixed seat at one end thereof having a curvature corresponding to that of the inner wall of a steel tube and a removable seat having the same curvature as that of the said fixed seat to be attached to the other end with a plurality of wedges inserted therebetween to bring the respective contacting parts of the both seats into close contact with the inner wall of the steel tube by means of the wedges. In addition to the said beams, two additional beams to one end of which the same removable seat as aforementioned one is attached with the same wedges inserted in the same manner may be employed.

3,776,254

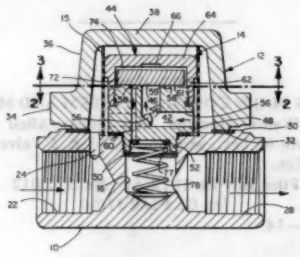
AERODYNAMIC CONDENSATE DISCHARGE TRAP AND SYSTEM

Thomas Alesson, Plains, and Theodore B. Dennis, Wilkes-Barre, both of Pa., assignors to Datron Systems, Inc. (Nicholson Division), Wilkes-Barre, Pa.

Filed Nov. 15, 1971, Ser. No. 198,741

Int. Cl. F16t *1/00*

U.S. Cl. 137—183 **7 Claims**



A bleed trap for piping systems containing air or other dry gas under pressure is described which includes a body adapted to engage a threaded opening in the system, and having inlet and outlet ports therein which respectively communicate with the upstream and downstream sides of the system. These ports terminate at a planar surface of the body which is normally sealed by a separate disc whose movement is restricted by an enlcosing cap which covers the disc as well as the planar surface. The entire body and inlet thereof is sealingly covered by a covering cap which causes system air to be directed into the inlet port of the body. The outlet ports are restricted by a spring loaded element which yields as air, gas, or condensate is bled from the system.

3,776,255

AIR VENT

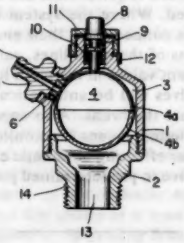
Yoshiyasu Fujiwara, No. 191 Nishitani, Kakogawa, Japan

Filed Aug. 9, 1971, Ser. No. 169,916

Claims priority, application Japan, Feb. 13, 1971, 46/7902; Apr. 2, 1971, 46/24215

Int. Cl. F16k *45/02*

U.S. Cl. 137—202 **6 Claims**



An improvement of the float type air vent, which is used as air vent valve for cold water, hot water and the like. The improvement resides particularly in the points that it is formed into small size and simple make and may be used without requiring any regulation in a wide range from very low pressure to high pressure, assuring a reliable working and low cost, thus assembling and overhauling and the like may be simplified.

3,776,256

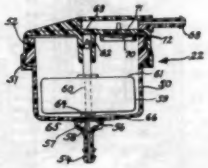
FUEL EVAPORATIVE CONTROL SYSTEM

Charles J. Marshall, Detroit, Mich., assignor to American Motors Corporation, Kenosha, Wis.

Division of Ser. No. 63,699, Aug. 14, 1970, Pat. No. 3,650,256. This application Jan. 21, 1972, Ser. No. 219,908

Int. Cl. F16k *45/00*

U.S. Cl. 137—202 4 Claims



A system designed to prevent raw fuel vapors from entering the atmosphere from the carburetor fuel bowl and the fuel tank of a motor vehicle. The carburetor is internally vented and the fuel tank vent line routes the vapors from the tank through a float type liquid-vapor separating valve to the cylinder head cover of the engine. The vapors are stored in the crankcase of the engine while the engine is not operating and combusted during engine operation with the blow-by products by use of the positive crankcase ventilation system.

3,776,257

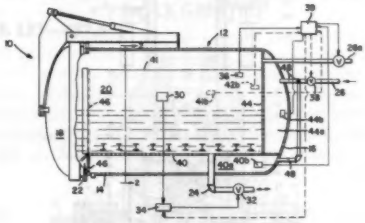
FALSE WALLED PRESSURE VESSEL

Henry J. Piegza, Clarence, N.Y., assignor to WSF Industries, Inc., Tonawanda, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,554

Int. Cl. B65d *7/22*

U.S. Cl. 137—206 14 Claims



A generally cylindrical pressure vessel for use in treating an article with a fluid under high pressure characterized in that one or more flat metal plates are arranged within the vessel so as to define an article treating chamber and one or more balancing compartments arranged intermediate the treating chamber and the cylindrical side wall and/or double curved end wall or walls of the vessel. The plates are capable of sustaining treating chamber loadings not substantially in excess of the hydrostatic head of the treating fluid; and a balancing fluid, which is introduced into the compartments is employed to balance high treating chamber loadings substantially in excess of the hydrostatic head. A control is employed to sense and compare pressures in the treating chamber and compartments and to terminate the introduction of fluid producing the high treating chamber loadings when such pressures are out of balance.

3,776,258

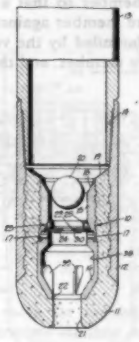
WELL PIPE VALVE

Roy Raymond Dockins, Jr., Anaheim, Calif., assignor to B & W Incorporated, Torrance, Calif.

Filed Mar. 20, 1972, Ser. No. 235,909

Int. Cl. F16k *51/00*

U.S. Cl. 137—269 16 Claims



A valve for use in a well pipe string including an apertured diaphragm for producing a variable restriction in fluid flow through the valve for controlled filling while running the well pipe and an expandable tapered valve seat for cooperating with a ball to allow the ball to pass downwardly through the valve seat to convert the valve to a reverse flow check valve to prevent subsequent upward flow of fluid through the valve.

3,776,259

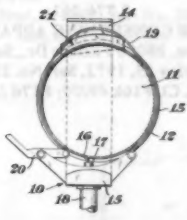
ADAPTER SHIM DEVICE

Richard William Kohrumel, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sept. 25, 1972, Ser. No. 291,812

Int. Cl. B23b *41/08*; F16e *41/04*

U.S. Cl. 137—318 6 Claims



An adapter shim to be used with an opening and dispensing device which is utilized with containers that do not have integral dispensing means. The adapter shim provides for safe opening and dispensing of containers of different sizes with a dispensing device designed for a container of a specific size.

3,776,260

BEER KEGS AND LIKE CONTAINERS

Maurice Ruddick, Sevenoaks, England, assignor to Burnett & Rolfe Limited, Kent, England

Filed Apr. 7, 1972, Ser. No. 242,052

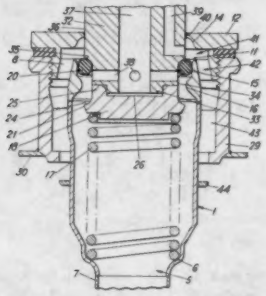
Claims priority, application Great Britain, Dec. 17, 1971, 58761/71; Apr. 13, 1971, 9243/71

Int. Cl. F16k *31/58*

U.S. Cl. 137—321 13 Claims

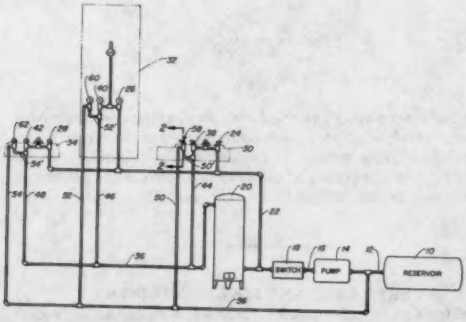
A spear and closure assembly which is arranged to be fitted as a single unit in the neck of a beer keg or like container com-

prises a tubular housing having one end open and the spear fixed to the housing and projecting from its other end, and a valve seat which is fixed to the housing so that it is located adjacent the open end of the housing and projects radially inwards with respect to the open end. The housing, the spear, and the valve seat are connected to form a unitary structure, such as by welding or by a combination of welding and being formed integrally. A spring located within the housing acts on a disc like closure member so that a resilient valve ring is pressed by the closure member against the valve seat, hence closing the opening bounded by the valve seat. Assembly of the spring, the closure member, and the valve ring within the



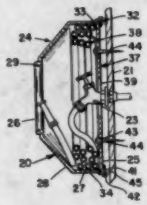
structure is made easy by arranging that the size and shape of the spring and closure member allow these to be passed through the opening bounded by the valve seat, and by providing the valve ring with sufficient resilience to allow it to be deformed and squeezed through this opening. In use, application of a filling or dispensing fitting moves the valve ring and the closure member axially inwards against the action of the spring, the valve ring being displaced axially relative to the closure member and forming a seal against a second valve seat formed on the housing so that two separate passages are formed through the fitting and into the container, one through the housing and the spear and the other outside the housing via an aperture between the two valve seats.

3,776,261
WATER CONSERVING APPARATUS
Connie H. Houghton, 28000 Foxlane Dr., Saugus, Calif.
Filed May 15, 1972, Ser. No. 253,253
Int. Cl. F16k *49/00*; F17d *1/00*
U.S. Cl. 137—337 **7 Claims**



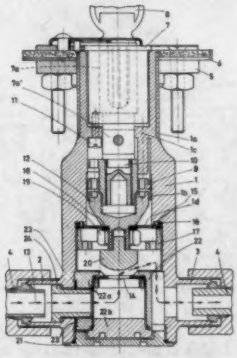
A water conserving apparatus designed particularly for use on recreational vehicles where a limited water supply is available, the apparatus includes a valved by-pass line connected to the hot water line to return the water located within the remote end of the hot water line to downstream of the water heater.

3,776,262
ENCLOSURE FOR COILED GARDEN HOSE
Udo H. Fritsch, 17 Mulberry Rd., Salem, N.H.
Filed Mar. 20, 1972, Ser. No. 236,420
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.16 **9 Claims**



A generally cylindrical garden hose enclosure is carried on an annular base whch encircles a sill cock when detachably mounted on the exterior wall of a house. The enclosure cover is cylindrical near the base, and truncated conical at the front, where it terminates in a dispensing opening. The hose is coiled around the inside of the cylindrical chamber, rather than being tightly wrapped around a core, and therefore does not kink and it is hidden from view by the truncated conical part of the cover.

3,776,263
FUEL CUT-OFF LOCK
Aloys Hubenthal, Hirshbergstrasse 19, Munich, Germany
Filed May 15, 1972, Ser. No. 253,470
Claims priority, application Switzerland, May 19, 1971, 7363/71
Int. Cl. F16k *35/06*
U.S. Cl. 137—384.8 **2 Claims**



Fuel flow through a pipeline is blocked and unblocked by means of a key operated rotary cylinder lock, a shut-off valve with a linearly reciprocable valve body, and a motion transmitting device which converts the rotary motion of the lock into translatory movement of the valve body. The motion transmitting device comprises a rotary, axially reciprocable element which has external screw threads in cooperative engagement with complementary internal screw threads of a surrounding housing; a reciprocable thrust element which connects the externally threaded element with the valve body; and a diaphragm seal between the reciprocable thrust element and the surrounding housing to prevent escape of fuel and fumes past the cylinder lock.

3,776,264

VACUUM RELIEF VALVES

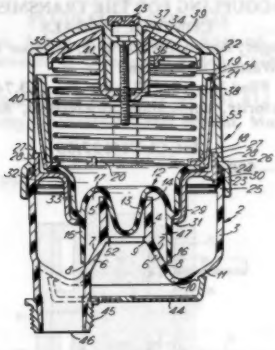
Douglas Lee Wenham, 90 Braid Rd., Hamilton, New Zealand

Filed Aug. 4, 1971, Ser. No. 168,839

Claims priority, application New Zealand, Aug. 4, 1970, 161050

Int. Cl. F16k *17/20*

U.S. Cl. 137—469 13 Claims



A vacuum relief valve has a movable member which coacts with an air inlet and stationary surfaces adjacent the inlet coact with shaped surfaces of the movable member to control the flow of air through the valve over a wide range of rates of flow. The control at high rates is assisted by providing a sharp cornered shoulder on the air inlet to cause a contraction of the entering column of air. The movable member is loaded by an adjustable spring and the movable member is guided by guiding surfaces.

3,776,265

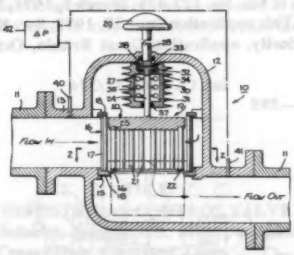
CONTROL VALVE AND PROCESS CONTROL SYSTEM

Joseph O'Connor, Jr., Goshen, N.Y.. assignor to Kieley & Mueller, Inc., Middletown, N.Y.

Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245. This application Sept. 25, 1972, Ser. No. 291,943

Int. Cl. G05d *7/03*

U.S. Cl. 137—487.5 2 Claims



The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

3,776,266

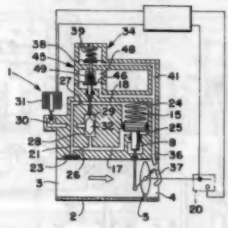
ENGINE STARTER VALVE

James H. Bass, Irvine, and Robert P. Smith, Newport Beach, both of Calif., assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Sept. 22, 1972, Ser. No. 291,236

Int. Cl. F16k *31/383*

U.S. Cl. 137—489 14 Claims



An engine starter valve for regulating engine starter air pressure to thereby control air flow in connection with the starting of aircraft turbine engines and the like characterized in that it has a main air flow control valve member which is actuated by a double acting actuator; a pressure sensor which senses air pressure downstream of the main valve member; and a modulator or pilot valve which is actuated by the sensor and which modulates the air flow from the upstream side of the main valve member to create differential pressure on opposite sides of the double acting actuator thus to move the main valve member to increase or decrease air flow through the valve. The valve herein is further characterized in that the modulator circuit embodies a pressure rise rate control valve therein to limit to desired value the rate of increase of air pressure downstream of the main valve member.

3,776,267

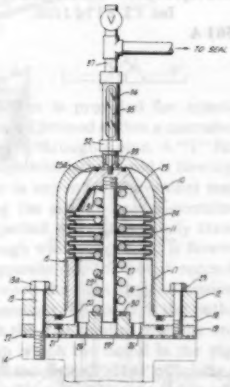
PRESSURE TRANSFER UNIT WITH BELLOWS

Lee Joe Alley, Whittier, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Sept. 7, 1972, Ser. No. 287,166

Int. Cl. F16k *51/00*

U.S. Cl. 137—494 14 Claims



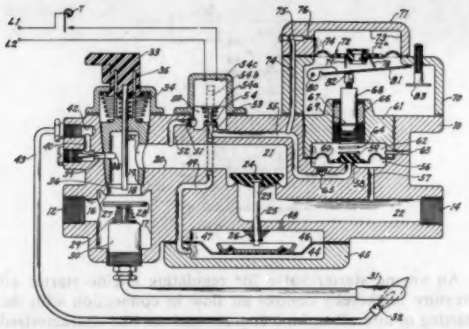
A pressure transfer unit including a bellows assembly separating an internal pressure chamber from a pressure source. An adjustable spring biases the bellows assembly to apply a predetermined pressure to fluid in the pressure chamber and to shut off fluid transfer in event of bellows failure.

3,776,268

STEPPED OPENING FLUID PRESSURE OPERATED GAS VALVE

Charles D. Visos, Manchester; John J. Love, and Carl A. Smith, both of St. Louis, all of Mo., assignors to Emerson Electric Co., St. Louis, Mo.

Filed June 2, 1972, Ser. No. 259,335
Int. Cl. F16k *31/365*
U.S. Cl. 137—495 **3 Claims**



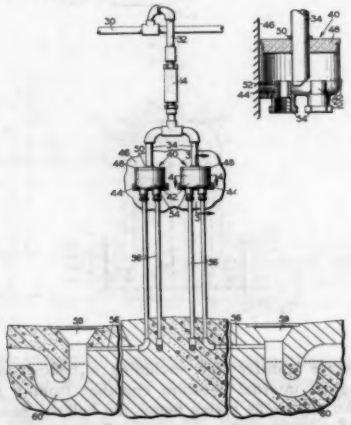
A stepped opening, diaphragm operated gas valve in which the operating pressure applied to the diaphragm is controlled by a spring biased pressure regulator and a delayed action pressure responsive actuator operating on an initial relatively low pressure acts, following a short delay, to increase the regulator spring bias, thereby to increase the controlled pressure and effect greater opening movement of the gas valve. An operative connection between the pressure responsive actuator and the regulator biasing spring includes means operative to transmit greater force and less movement during initial response of the actuator to the relatively low controlled pressure and greater movement and less force upon subsequent response of the actuator to the relatively greater controlled pressure developed as a consequence of the initial force and movement.

3,776,269

PRIMING UNIT FOR DISTRIBUTING PRIMING WATER TO MULTIPLE SEWER LINE WATER TRAPS

James B. Watts, Overgaard, Ariz., assignor to Precision Plumbing Products, Inc., Portland, Oreg.

Filed Apr. 7, 1972, Ser. No. 241,955
Int. Cl. F17d *1/08*
U.S. Cl. 137—561 A **3 Claims**



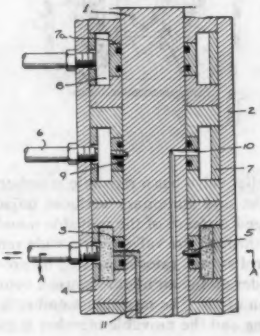
A priming unit for distributing priming water to multiple sewer line water traps comprises a case of compact dimensions, means for coupling the case to a source of priming water, and a plurality of water outlet conduits penetrating the case floor by a distance predetermined to permit use of water contained in the case to measure the level condition of the unit and to insure substantially equal distribution of priming water through all of the conduits to the various sewer line water traps.

3,776,270

FLUID COUPLING FOR THE TRANSMISSION OF CONTROL SIGNALS

Freddy Wanger, Baden, Switzerland, assignor to Heberlein & Co., AG, Wattwil, Switzerland

Filed July 19, 1971, Ser. No. 163,740
Claims priority, application Switzerland, Aug. 17, 1970, 12314/70
Int. Cl. F16l *27/00*
U.S. Cl. 137—580 **4 Claims**



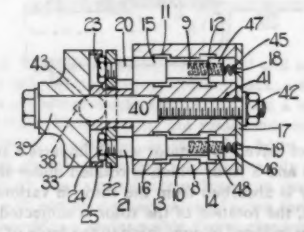
Fluid coupling including a hollow stator and cylindrical rotor within same and having at least one longitudinally extending pipe for conveying fluid to device to be actuated, the stator having at least one chamber adapted to register with an opening in the rotor in a particular relative rotational position of the rotor and stator to effect fluid communication between the pipe and the device to be actuated.

3,776,271

FLUID CONTROL VALVE

Alwyne Lee, 47 Bushby's Ln., Formby, England

Division of Ser. No. 122,479, March 9, 1971, Pat. No. 3,685,286. This application June 27, 1972, Ser. No. 266,557
Claims priority, application Great Britain, Oct. 20, 1970, 50,155/70
Int. Cl. F16k *31/524*
U.S. Cl. 137—595 **8 Claims**



A fluid control valve has a pair of spool closure members which are slidable in unison to control flow between associated pairs of ports in response to relative movement

between a pair of control elements on the valve. The said relative movement causes axial displacement of actuators which engage an abutment secured to the spools, the abutment being biased into contact with the actuators.

3,776,272

FLUID FLOW SYSTEMS

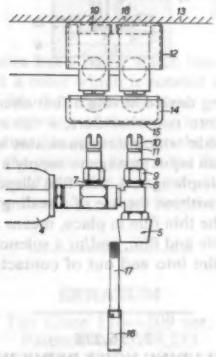
Dennis Charles Arbon, Cheltenham, England, assignor to Walker Crosweller & Company Limited, Cheltenham, England

Filed Mar. 3, 1972, Ser. No. 231,514

Claims priority, application Great Britain, Mar. 17, 1971, 7,345/71

Int. Cl. F16k *19/00, 15/18*

U.S. Cl. 137—596 **5 Claims**



In a fluid flow system, such as for central heating, the pipework includes a valve which may be regarded as a socket to which an appliance may be connected at will so as to utilise the fluid in the system, the valve being automatically maintained in closed position but opened by connection means on the appliance when the appliance is connected to the system. Preferably, a plurality of valves are provided at appropriate locations so that the appliance can be connected at any selected location, and the valve may control both outlet and inlet fluid flows.

3,776,273

DIRECTIONAL CONTROL VALVE

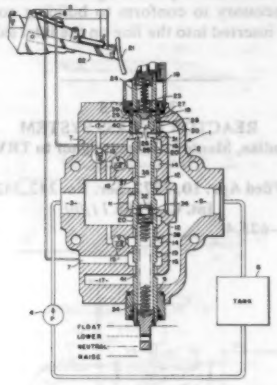
Herbert H. Schmiel, Minneapolis, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 17, 1972, Ser. No. 227,212

Int. Cl. F15b *21/00;* **F16k** *17/26, 17/32*

U.S. Cl. 137—596.12 **6 Claims**

A four-way spool valve assembly embodying a regenerative circuit for controlling the actuation of a double acting fluid motor for a bulldozer blade or the like characterized in that the spool has therewithin a relief valve and a check valve respectively operative to build up back pressure in the return line from the rod end of the motor during the blade lowering operation and to permit return flow under such back pressure into the inlet port to prevent cavitation of the head end of the motor, and further characterized in that the spool has a float position in which a bypass passage in the assembly is open for



flow of fluid from the inlet passage to the return passage and in which both motor ports have unrestricted communication with the return passage.

3,776,274

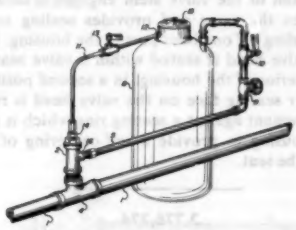
APPARATUS FOR EFFECTING CHEMICAL TREATMENT OF A LIQUID FLOWING THROUGH A PIPE

Jack C. Riley, Tucson, Ariz., assignor to Russell E. Taft and Andrey D. Taft, Tucson, Ariz., part interest to each

Filed July 10, 1972, Ser. No. 270,168

Int. Cl. F16k *19/00*

U.S. Cl. 137—599 **4 Claims**



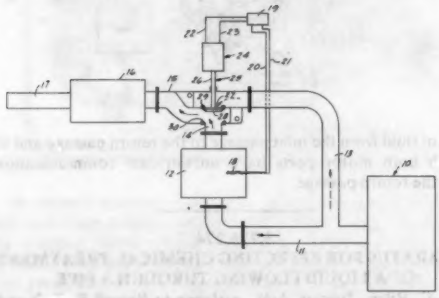
Simplified apparatus is provided for injecting controlled amounts of a chemical housed within a container into a liquid, such as water, flowing through a pipe. A "T" fitting is coupled into the pipe through which the liquid is flowing by means of a second T fitting or in any other convenient manner. A length of tubing coupling the output from a container holding the chemical to be injected extends coaxially through the T and into the pipe through which the liquid is flowing, terminating just short of the opposite side thereof. A second length of tubing is coupled between the right angle extension from the T to the inlet of the container. The area at the outlet of the tubing extending through the T is smaller than the area surrounding the tubing through which the liquid in the pipe may pass to communicate with the second piece of tubing which leads to the container inlet. Thus, in effect, a suction is observed at the outlet terminal which draws liquid flowing through the pipe into the container, where it mixes with the chemical therein, and back into the pipe conveying the liquid. Flow rate through the container, and hence the concentration of chemical injected into the liquid flowing through the pipe, is controlled by a conventional valve on the inlet side to the container. Addi-

tionally, a second conventional valve may be added to the inlet side to the container and a third conventional valve to the outlet side of the container to permit complete isolation of the container to facilitate replenishing the chemical contained therein. If necessary to conform to building codes, a check valve may be inserted into the line on the inlet side of the container.

3,776,275
REACTOR BYPASS SYSTEM

Stanley H. Updike, Mentor, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Apr. 10, 1972, Ser. No. 242,342
Int. Cl. F16k *11/00*
U.S. Cl. 137—625.4 **12 Claims**

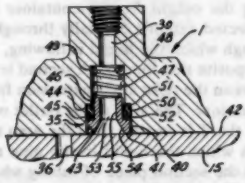


A double acting valve assembly, particularly designed for use in conjunction with catalytic reactors of the type employed in internal combustion engine exhaust treatment. The valve assembly includes a housing and a poppet type valve, axially movable within the housing into two positions, in one of which a portion of the valve stem engages a flexible spring washer to flex the same and provides sealing engagement therewith, sealing off one inlet port to the housing. In this one position, a valve head is seated within a valve seat provided within the interior of the housing. In a second position of the valve, another seating face on the valve head is received in seating engagement against a seating ring which is positioned within the housing to provide a self-centering of the valve head against the seat.

3,776,276
VALVE SEAL

Marshall A. Stiltner, 632 Cliff Dr., Laguna Beach, Calif.

Continuation-in-part of Ser. No. 867,691, Oct. 20, 1969, abandoned. This application Mar. 15, 1971, Ser. No. 124,343
Int. Cl. F16k *3/02*
U.S. Cl. 137—625.18 **10 Claims**

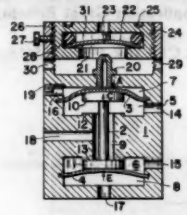


A valve assembly in which a tubular seal ring circumscribes a valve port and has a flat end face slidably and sealingly engaged with the opposing flat face of a valve member having another port, the seal ring having a resilient seal engaged in a bore between a shoulder in the seal ring and an opposing stationary shoulder and the seal ring also having a skirt extending into the valve port and engaged by a spring to bias the flat face of the seal ring into normal engagement with the opposing flat face.

3,776,277
FLUID SWITCHING DEVICE

Mitsuyoshi Nagashima, Sayama, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Filed July 16, 1971, Ser. No. 163,216
Claims priority, application Japan, May 11, 1971, 46/31404
Int. Cl. F16k *31/145*
U.S. Cl. 137—625.6 **4 Claims**

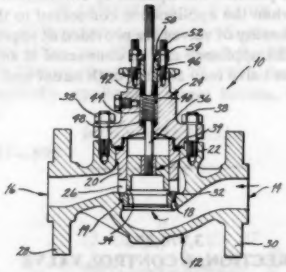


A fluid switching device having a first chamber partitioned by a diaphragm into two chambers, a valve secured to said diaphragm, a nozzle which communicates with one of said chambers having an input passage to supply a pressure fluid to one side of said diaphragm, a thin film disposed in a second chamber, with or without the use of a sealing member to hold the periphery of the thin film in place, means to adjust the gap between said nozzle and film, and/or a solenoid which electrically brings the film into and out of contact with the nozzle orifice.

3,776,278
VALVE INCLUDING NOISE REDUCING MEANS

Ernest E. Allen, State Center, Iowa, assignor to Fisher Controls Company, Inc., Marshalltown, Iowa

Continuation-in-part of Ser. No. 863,099, Oct. 2, 1969, abandoned. This application June 29, 1971, Ser. No. 157,906
Int. Cl. F15d *1/10*; F16k *47/02*
U.S. Cl. 137—625.38 **1 Claim**



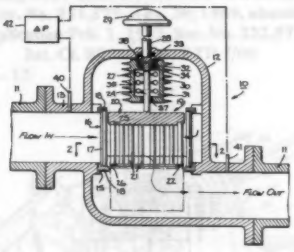
A control valve including inlet and outlet ports, a valve seat and a cage member within which a valve plug is free to reciprocate toward and away from the valve seat to determine the flow therethrough. The cage member or valve plug are provided with a plurality of smooth-walled, narrow, substantially equally-spaced slots. In operation, the valve plug movement away from the valve seat controls fluid flow from the inlet port to the outlet port of the valve. The flow is directed through the slots, one dimension of which is sufficiently small (approximately 1/16 inch) to partition the flow, thereby to substantially attenuate the noise normally accompanying fluid flow through a control valve.

3,776,279

SYSTEM FOR CHANGING FLUID MOVEMENT INTO ELECTRICAL ENERGY

Joseph O'Connor, Jr., Goshen, N.Y., assignor to Kieley & Mueller, Inc., Middletown, N.Y.

Division of Ser. No. 112,890, Feb. 5, 1971, Pat. No. 3,709,245.
This application Sept. 25, 1972, Ser. No. 291,906
Int. Cl. F16k *51/00*
U.S. Cl. 137—802 **6 Claims**



The control valve has a stator which imparts a swirl to the flow of fluid and a rotor which is rotated under the swirl of fluid. Energy is absorbed from the rotor in various ways. In one instance, the rotation of the rotor is subjected to a drag force which is induced in opposition to the force of rotation in order to control the pressure drop in the flow. In another instance, the rotation of the rotor is used to store electrical energy which can be used for other purposes throughout the process system.

ERRATUM

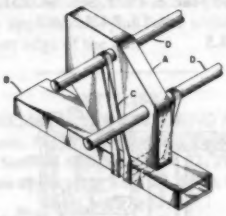
For Class 138—109 see:
Patent No. 3,776,253

3,776,280

HAND LOOM

Jules Kliot, 2150 Stuart St., Berkeley, Calif.

Filed Apr. 24, 1972, Ser. No. 246,744
Int. Cl. D03d *29/00*
U.S. Cl. 139—33 **6 Claims**



A unique means for changing sheds on a weaving loom.

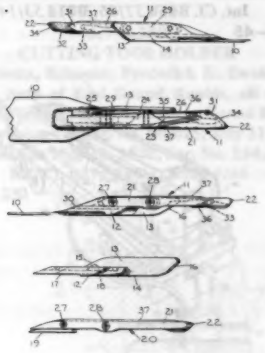
3,776,281

WEFT CARRIER FOR SHUTTLELESS LOOMS

Richard L. Volpe, Hopedale, Mass., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 24, 1972, Ser. No. 256,497
Int. Cl. D03d *47/20*
U.S. Cl. 139—122 N **1 Claim**

An improved weft receiving carrier for shuttleless looms having its hooked weft engaging portion and the combined weft trapping and tensioning member operatively associated therewith disposed on the reed or rearward side of the carrier and an integrally formed guide member for maintaining the



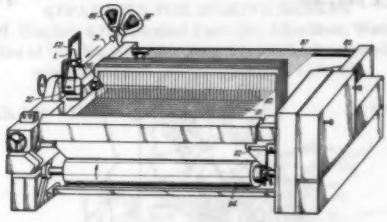
hooked portion and combined trapping and tensioning member in a generally horizontal path during insertion of the carrier into the warp sheds.

3,776,282

METHOD OF AND APPARATUS FOR METERING AND STORING WEFT YARN FOR INTERMITTENT INSERTION INTO THE SHED OF SHUTTLELESS LOOMS

Zdenek Sevcik, and Josef Jankovsky, both of Brno, Czechoslovakia, assignors to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed July 10, 1972, Ser. No. 270,044
Int. Cl. D03d *47/36*
U.S. Cl. 139—122 R **16 Claims**



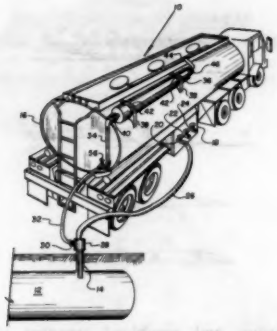
Method of and apparatus for metering and storing continuously metered weft yarn for intermittent inserting into the shed of a shuttleless loom. In such method the weft yarn metering rate is higher than the winding of the same onto a yarn storage drum, the remaining portion of the metered weft yarn length being stored as a loose loop. The device comprises a storage drum provided with a gripper controlled by a cam disc, a metering drum, a chamber, on the entering side of the chamber there being provided a pressing roller attached to the metering drum, and on the exit side thereof there being provided a device for weft yarn braking.

3,776,283

VAPOR RECOVERY SYSTEM

W. Edward Kramer, Pittsburgh, and Edward Mitchell, Valencia, both of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed June 15, 1972, Ser. No. 263,233
Int. Cl. B65b *31/06*; B01d *53/14*
U.S. Cl. 141—45 6 Claims



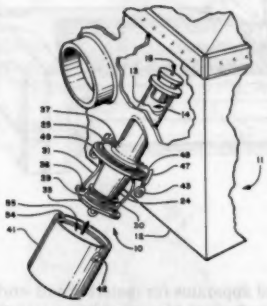
A canister containing an absorbent material is detachably mounted on a tank truck for delivery of volatile liquids. An inlet to the canister is connected through a vapor recovery hose to the vapor space in a liquid storage tank and an outlet to the canister is connected to the vapor space in a tank on the truck. As the volatile liquid is delivered into the storage tank, air displaced from the storage tank is forced via the vapor recovery hose through the absorbent and into the delivery tank. Vapors of the liquid are absorbed in the canister. Pressure relief means are connected to require all air entering or leaving the tank on the truck to pass through the canister.

3,776,284

ARTICLE REMOVAL DEVICE FOR GLOVEBOX

Raymond H. Guyer, Longmont, and Robert G. Leebl, Arvada, both of Colo., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Jan. 20, 1972, Ser. No. 219,302
Int. Cl. B65b *31/04*
U.S. Cl. 141—65 5 Claims



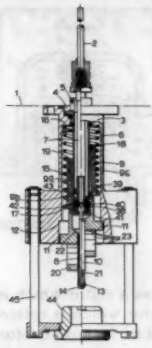
An article removal device for a glovebox comprising a conduit extending through a glovebox wall which may be closed by a plug within the glovebox, and a fire-resistant container closing the outer end of the conduit and housing a removable container for receiving pyrophoric or otherwise hazardous material without disturbing the interior environment of the glovebox or adversely affecting the environment outside of the glovebox.

3,776,285

APPARATUS FOR FILLING CONTAINERS WITH LIQUID

Arthur Ernest Nicholls, Hornchurch, England, assignor to Farrow and Jackson Limited, London, England

Filed Nov. 30, 1971, Ser. No. 203,343
Claims priority, application Great Britain, Dec. 21, 1970, 60,565/70
Int. Cl. B65b *37/02*; B67c *3/26*; B67d *3/02*
U.S. Cl. 141—386 3 Claims



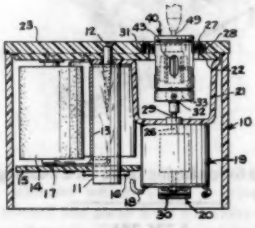
Valve mechanism for filling a miniature bottle in which a bottle rising to a filling position lifts a vertical sleeve from engagement at its end with a seal at the lower end of a tubular center part formed with a slot just above the seal. This enables liquid to run down a double passageway formed between the inner surface of the sleeve and the center part, while air in the bottle escapes through the slot and up the tubular center part. The passages in the double passageway converges to a narrow edge at their lower end and are so disposed in relation to the slot that the liquid is discharged on one side of the seal while the air enters the tubular part on the other side. The tubular part is divided into comparatively rigid upper and lower portions resiliently joined together so that the lower portion can adapt itself precisely to the path of the reciprocable sleeve, which is a neat sliding fit on arcuate surfaces extending along the tubular part.

3,776,286

DRAWING LEAD SHARPENER

Charles M. Blanck, 1545 State, Algonac, Mich.

Filed Mar. 6, 1972, Ser. No. 231,861
Int. Cl. B43l *23/02*
U.S. Cl. 144—28.5 9 Claims



This invention relates to an improved power operated drawing lead sharpener used for sharpening the drawing leads for mechanical drafting operations. The specification discloses an improved cutting head mechanism wherein multiple cutting blades insertable in a carrier member form a replaceable cartridge which is inserted in the cutting head. Therefore, the

draftsman can service the unit himself which was not possible previously. Also, there is disclosed an improved swivel mounting for the cutting head whereby while the cutter head is easily removed for emptying the graphite particles produced by the sharpening process, it cannot fall off accidentally.

3,776,287

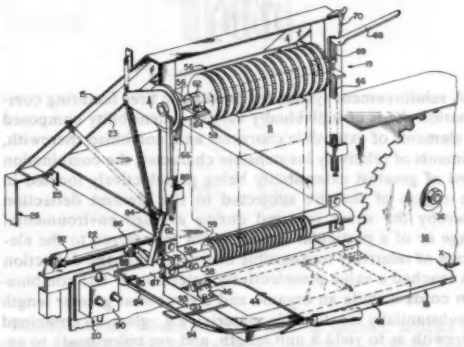
APPARATUS FOR MAKING UNIFORM SEMI-SPLIT SHAKES

John H. Hughes, 6321 Central Park Dr., Aberdeen, Wash.

Division of Ser. No. 851,575, Aug. 20, 1969, abandoned. This application Feb. 1, 1972, Ser. No. 222,575

Int. Cl. B27m *3/02*; B27l *7/00*

U.S. Cl. 144—13 **9 Claims**



A shake bolt is carried between upper and lower rollers that are mounted on a movable carriage. A saw and a vertical splitting bar aligned with the saw are mounted on a stationary frame adjacent to the carriage. The bolt is advanced by simultaneously rotating said rollers. In one embodiment the bolt is tilted by first rotating the top roller alone. A kerf is cut in the bolt by moving the carriage past the saw blade. A shake is then split from the bolt by returning the carriage while passing the splitting bar through the kerf adjacent to the inner end thereof. The shake has a tip portion of uniform thickness and a thicker naturally split weather portion. In one form, the tip portion is at an angle with respect to the weather portion. A method of making semi-split shakes comprising making a cut into and across an end of a shake bolt to establish a predetermined tip length and splitting the weather portion of the shake from the bolt by applying a prying force within the cut and adjacent to the inner edge of the cut.

3,776,288

BLADE ASSEMBLIES FOR FLAKING APPARATUS

Donald L. Johnson, 1816 N. Lenace Dr., Tacoma, Wash.

Division of Ser. No. 630,396, April 12, 1967, Pat. No. 3,526,258. This application Aug. 27, 1970, Ser. No. 67,441

Int. Cl. B27g *13/04*

U.S. Cl. 144—235 **16 Claims**

Blade assembly for flaking and surfacing machines including a runner mounted on a closure head to comprise a cutterhead. Removable blade mounting blocks are supported on the periphery of the runner with said blocks in turn supporting blade holders and blades. The blocks are anchored in the runner with fir tree root type mounting bases. The holders are also removable from the blocks.

3,776,289

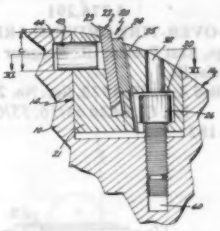
CUTTING TOOL HOLDER

Charles E. Boboltz, Belmont; Frederick K. Zwald, and Ralph B. Baldwin, both of East Grand Rapids, all of Mich., assignors to Oliver Machinery Company, Grand Rapids, Mich.

Continuation-in-part of Ser. No. 60,025, July 31, 1970. This application May 18, 1972, Ser. No. 254,667

Int. Cl. B27g *13/04*; B26d *1/36*

U.S. Cl. 144—230 **6 Claims**



A plurality of cutting members are individually and detachably mounted on a rotatable drum and arranged in spaced and staggered helical rows. Each cutting member is a separate blade having multiple cutting edges and an indexing block. A seating block engaging the indexing block indexes the cutting blade with the proper projection to engage the work as the drum is rotated. The seating block also indexes the cutting edge to make a linear "plane" on the work surface and permits blade sharpening to be done by a cutting tool operable in a direction parallel to the drum axis. A pin projects from the seating block into a precisely located index hole to control the height of projection of the blade. The pressure lock for the blade acts directly on the blade. The cutting member and indexing block are permanently attached by offsetting a portion of the block into an opening in the blade.

3,776,290

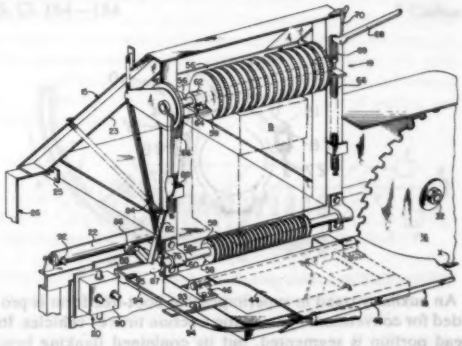
UNIFORM SEMI-SPLIT SHAKE AND METHOD AND APPARATUS FOR MAKING SHAKES

John H. Hughes, 6321 Central Park Dr., Aberdeen, Wash.

Division of Ser. No. 851,575, Aug. 20, 1969, abandoned. This application Feb. 1, 1972, Ser. No. 222,560

Int. Cl. B27m *3/02*

U.S. Cl. 144—326 R **9 Claims**



A shake bolt is carried between upper and lower rollers that are mounted on a movable carriage. A saw and a vertical

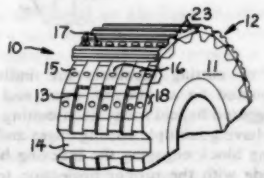
splitting bar aligned with the saw are mounted on a stationary frame adjacent to the carriage. The bolt is advanced by simultaneously rotating said rollers. In one embodiment the bolt is tilted by first rotating the top roller alone. A kerf is cut in the bolt by moving the carriage past the saw blade. A shake is then split from the bolt by returning the carriage while passing the splitting bar through the kerf adjacent to the inner end thereof. The shake has a tip portion of uniform thickness and a thicker naturally split weather portion. In one form, the tip portion is at an angle with respect to the weather portion. A method of making semi-split shakes comprising making a cut into and across an end of a shake bolt to establish a predetermined tip length and splitting the weather portion of the shake from the bolt by applying a prying force within the cut and adjacent to the inner edge of the cut.

3,776,291

TRACK-OVER-TIRE DRIVING ARRANGEMENT

Roger L. Boggs, East Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 28, 1972, Ser. No. 248,576
Int. Cl. B62d *65/16, 55/08*
U.S. Cl. 152—182 **10 Claims**



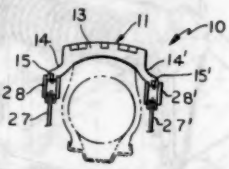
The tread of a rubber tire has circumferentially extending continuous grooves and transversely disposed notches formed thereon. A track assembly, comprising a plurality of closely coupled track shoes, circumferentially surrounds the tire and has drive lugs secured thereon which engage the notches. Circumferentially extending flexible belts are secured to the track shoes and engage the grooves.

3,776,292

AUXILIARY TREAD FOR TRACTION TIRE

Lorenzo Boscaino, 1 Chestnut St., Norristown, Pa.

Filed Jan. 19, 1972, Ser. No. 218,907
Int. Cl. B60c *27/16*
U.S. Cl. 152—225 **15 Claims**



An auxiliary tread in superimposable boot-like form is provided for conventional pneumatic traction tires of vehicles. Its tread portion is segmented, but its conjoined flanking bead portions are not. The auxiliary tread is retained detachably in place on a tire by mounting means connected to the bead portions.

3,776,293

REINFORCEMENT FOR TIRES

Alfred Marzocchi, Cumberland, R.I., assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 664,020, Aug. 29, 1967, Pat. No. 3,631,667. This application Jan. 18, 1971, Ser. No. 107,193
Int. Cl. B60c *9/00*; D02g *3/02*
U.S. Cl. 152—359 **5 Claims**

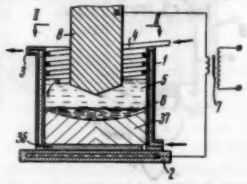
A reinforcement system for pneumatic tires featuring combination cords of individually varying extensibility composed of elements of extensible character and, combined therewith, elements of relatively inextensible character; the combination cord of greatest extensibility being preselectively located in the region of the tire subjected to the greatest deflection whereby the stress incurred during average environmental usage or of a particular impact is not transferred to the elements of relatively inextensible character until the deflection has reached a value preselectively determined. The combination cords include an organic and a somewhat greater length of substantially inextensible material, e.g., glass, so combined therewith as to yield a unit length, and are tailor-made to exhibit a particular degree of elongation depending upon the particular combination of variable lengths and the selection of organic elements to be combined with the glass.

3,776,294

METHOD OF ELECTROSLAG REMELTING

Boris Evgenievich Paton, ulitsa Kotsjubinskogo, 5, kv. 21; Boris Izrailevich Medovar, bulvar Lesi Ukrainki, 2, kv. 8; Jury Vadimovich Latash, Vozdukhoflotsky prospekt, 81, kv. 14; Leonty Vasilievich Chekotilo, ulitsa Scherbakovka, 49a, kv. 10; July Georgievich Emelyanenko, ulitsa Darvina, 5, kv. 5; Vasily Ivanovich Us, ulitsa Saxaganskogo, 58, kv. 12; Vitaly Mikhailovich Baglai, ulitsa Semashko, 10, kv. 54/3; Viktor Mikhailovich Martyn, ulitsa Vernadskogo, 65, kv. 102; Viktor Leonidovich Artamonov, ulitsa Sovskaya, 9, kv. 4; Oleg Petrovich Bondarenko, ulitsa Kreschatik, 15, kv. 34; Georgy Alexandrovich Boiko, ulitsa V1. Libedskaya, 16, kv. 106; Anatoly Konstantinovich Tsikulenko, ulitsa Babushkina, 23, kv. 38; Vasily Vladimirovich Ivon, Darnitskoe shosse, 107/2, kv. 16, and Leonid Viktorovich Pavlov, Borschagovskaya ulitsa, 234, kv. 6, all of Kiev, U.S.S.R.

Filed Mar. 18, 1971, Ser. No. 125,744
Int. Cl. B22d *27/02*; C22d *7/00*
U.S. Cl. 164—52 **5 Claims**



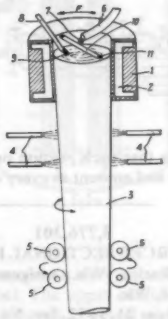
A method of electroslag remelting of consumable electrodes according to the invention, characterized in that the agents improving the quality of the ingot are blown into the melt so that the injected flow of these agents cause rotation of this melt.

3,776,295

METHOD OF CONTINUOUS ROTARY CASTING OF METAL UTILIZING A LIQUEFIED GAS TO FACILITATE SOLIDIFICATION

Michel Mola, Paris; Philippe Barthelemy, Sevres; Gerard Bentz, Elancourt-Trappes, and Jean Galey, Saint-Maur, all of France, assignors to Societe Civile D'Etudes De Centrifugation, Paris, France

Filed Dec. 22, 1971, Ser. No. 210,712
Claims priority, application France, Dec. 24, 1970, 7046640
Int. Cl. B22d 11/10
U.S. Cl. 164—66 11 Claims



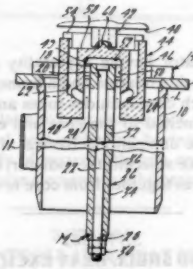
Rotary method of continuously casting metallic articles in which a liquefied gas is introduced into the top of the mold and apparatus for use in carrying out said method.

3,776,296

METHOD FOR CONTINUOUSLY CASTING A HOLLOW BILLET

Thomas B. Arrington, and Leonard A. Moody, both of Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Division of Ser. No. 134,953, April 19, 1971, Pat. No. 3,735,803. This application Apr. 24, 1972, Ser. No. 246,644
Int. Cl. B22d 11/10
U.S. Cl. 164—85 4 Claims



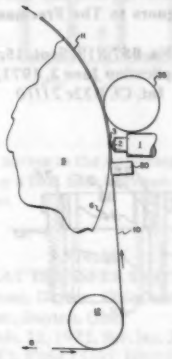
Melted metal, typically copper, is applied through floating valve means to a water-cooled mold containing a mandrel of special form and materials so as to result in continuous downward movement of the solidified billet through the bottom lower end of the mold and over the lower end of the mandrel.

3,776,297

METHOD FOR PRODUCING CONTINUOUS LENGTHS OF METAL MATRIX FIBER REINFORCED COMPOSITES

John F. Williford, and James P. Pilger, both of Richland, Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Mar. 16, 1972, Ser. No. 235,340
Int. Cl. B22d 11/10
U.S. Cl. 164—86 18 Claims



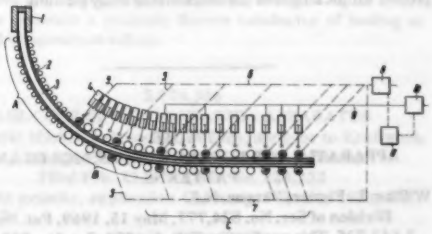
A method for producing metal matrix fiber reinforced tape by directing a plurality of arranged fibers through a stable meniscus of molten metal and effecting rapid solidification of the molten metal through the use of moving heat extracting members so as to retain the desired mechanical properties of the composite material by minimizing the exposure of the fibers to high temperature molten metal.

3,776,298

APPARATUS FOR CONTROLLING THE PRESSURE FORCE IN MULTI-ROLL DRIVES FOR EQUIPMENT WITHDRAWING AN INGOT FROM A CONTINUOUS CASTING MACHINE ALONG A CURVED PATH

Gerd Vogt, Meerbusch, Germany, assignor to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed June 29, 1972, Ser. No. 267,317
Claims priority, application Germany, July 2, 1971, P 21 33 937.7
Int. Cl. B22d 11/12
U.S. Cl. 164—154 3 Claims



A withdrawal stand for continuously cast, curved ingots is disclosed wherein the contact pressure of driven rolls is con-

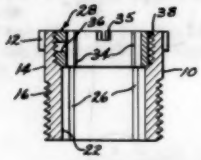
trolled to normally exceed only slightly the internal pressure of the ingot; the contract pressure is increased if the traction resistance increases.

3,776,299

GUIDE BUSHING ASSEMBLY FOR FLASK, PATTERNS, AND THE LIKE

Gerald R. Rusk, Maumee, Ohio, and Robert E. Kock, Ottawa Lane, Mich., assignors to The Freeman Supply Company, Toledo, Ohio

Division of Ser. No. 857,819, Sept. 15, 1969, Pat. No. 3,612,161. This application June 2, 1971, Ser. No. 159,550
Int. Cl. B22c *21/10*
U.S. Cl. 164—385 **12 Claims**



A two part bushing or guide pin for aligning foundry flasks, hot boxes, and the like comprising: a machinable body portion having external threads for threading into a flask, hot box, etc., and internal threads for receiving either a hardened nonmachinable guide ring or a hardened nonmachinable guide pin.

In the case of the hardened nonmachinable guide ring, the outer surfaces are provided with hardened ground threads adapted to be threaded into the internal threads of the main body portion. Suitable means is provided for locking the ring in angular relationship with the body after it is threaded therein. The construction permits the main body portion of the bushing to be firmly seated and locked in a flask, etc., following which the hardened ring can be rotated within the main body portion until its surfaces are accurately angularly positioned relative to the flask, and the ring then locked to the bushing. The locking means may comprise an opening through the sidewalls of the ring for receiving a staking tool for deforming the internal threads of the main body portion. Alternatively, a longitudinally extending hemicylindrical groove may be provided in the periphery of the hardened ring, and the adjacent portion of the body drilled, to receive a soft metal locking pin.

In the case of the guide pin, it is provided with a ground and hardened guide pin insert having external ground threads adapted to be inserted into the softer machinable body portion. The guide pin insert may include the hemicylindrical groove for locking it to the machinable body portion.

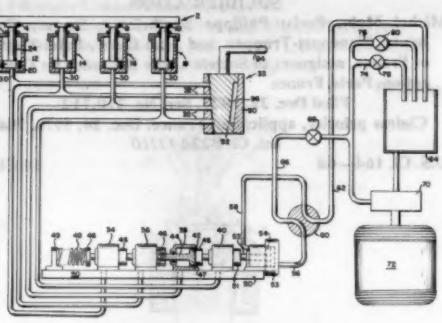
3,776,300

APPARATUS FOR LIFTING FLASKS, MOLDS AND PATTERNS

William L. Fismer, Verona, N.J.

Division of Ser. No. 824,777, May 15, 1969, Pat. No. 3,643,725. This application Feb. 4, 1972, Ser. No. 223,497
Int. Cl. B22c *17/00*
U.S. Cl. 164—403 **7 Claims**

An arrangement is disclosed for improving the handling or stripping of the flasks or molds of the type which are used to cast large items such as cast metal plates or frames. A system is provided for lifting the flask or mold vertically from the pattern with assurance that each portion or part is moved at exactly the same rate and amount as every other part.

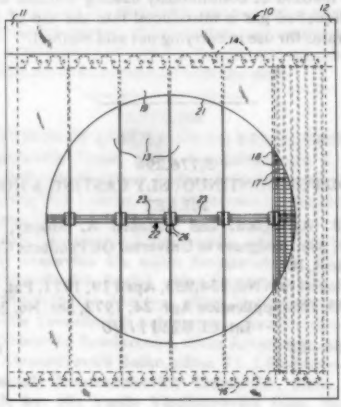


3,776,301

REINFORCED SECTIONAL RADIATOR

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed June 21, 1972, Ser. No. 264,811
Int. Cl. F28f *9/00*
U.S. Cl. 165—67 **4 Claims**



A sectional radiator having a plurality of separate cores disposed in side-by-side relation and a framework securing the cores together. Each core includes tubes and fins, and a reinforcing piece is attached to the core and extends across the width of the core to dampen mechanical vibrations set up by machinery or the like adjacent the radiator. Connectors attach the reinforcing pieces together from core to core.

3,776,302

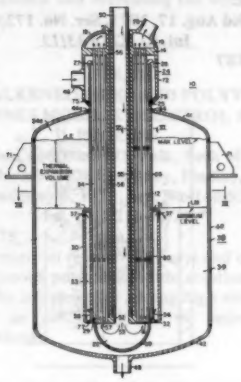
TUBE AND SHELL HEAT EXCHANGER

Remco P. Waszink, St. Petersburg, and Michael G. Purnell, Tampa, both of Fla., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 14, 1972, Ser. No. 225,810
Int. Cl. F28f *19/00*
U.S. Cl. 165—82 **10 Claims**

A tube and shell heat exchanger in which a tube bundle and an encompassing tubular liner extend downwardly into an en-

larged main pressure vessel. The lower end of the tube bundle is freely movable during linear expansion in operation and a tubular flow guide at the lower end of the tube bundle is em-



ployed in a manner to maintain a predetermined liquid level in the main pressure vessel. The upper end of the tube bundle is supported in a second pressure vessel superimposed on the main vessel and communicating therewith.

3,776,303

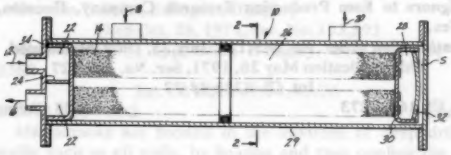
HEAT EXCHANGER

George A. Anderson, Northford; Frederick A. Burne, Hamden, both of Conn.; Neil O. Neunaber, East Alton, Ill., and Edward L. McFadden, Hamden, Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 27, 1971, Ser. No. 137,871

Int. Cl. F28f *9/22*

U.S. Cl. 165—82 **3 Claims**



This invention relates to heat exchangers, and more particularly to an improved heat exchanger having tubular elements and a pervious body of material therein and wherein fatigue cracking of the tubular elements is substantially eliminated.

3,776,304

CONTROLLABLE HEAT PIPE

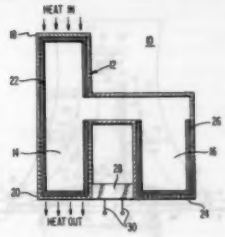
Victor Auerbach, Cranbury, N.J., assignor to RCA Corporation, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,729

Int. Cl. F28d *15/00*

U.S. Cl. 165—96 **5 Claims**

In a heat pipe comprising three heat-transfer regions, a first capillary structure is disposed at, and extends between, two of the regions; and a second capillary structure, hydrodynamically isolated from the first capillary structure, is disposed at the third region. Thermal switching between the first two regions, one of which serves as the condenser region of the heat pipe, is controlled by a heat flow between the third region and the condenser region.



3,776,305

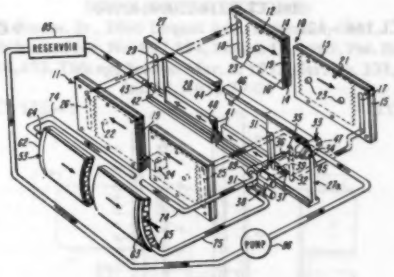
HEAT TRANSFER SYSTEM

Carl Edward Simmons, Dayton, Ohio, assignor to United Aircraft Products, Inc., Dayton, Ohio

Filed Feb. 22, 1972, Ser. No. 227,779

Int. Cl. F28d *15/00*; H01l *01/12*

U.S. Cl. 165—107 **15 Claims**



A heat transfer system in which a fluid of substantial heat absorption qualities is caused to flow in successive heat absorption and heat dissipation phases, a latter having one or more differential modes. In the disclosed embodiment of the system, a cold plate-liquid boiler assembly provides flow paths for the successive phases, the differential heat dissipation modes being provided by the liquid boiler and by external cooling means alternatively included in a heat rejection circuit. Vent control apparatus associated with the liquid boiler tends to maintain a pressure therein conducive of boiling at selected temperature values.

3,776,306

AIR-COOLED CONDENSATION APPARATUS

Rupprecht Michel, Erlangen, Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mulheim (Ruhr), Germany

Filed Feb. 22, 1972, Ser. No. 228,222

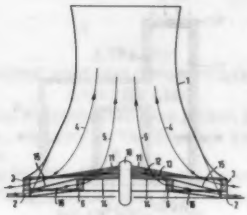
Claims priority, application Germany, Feb. 24, 1971, P 21 08 615.7

Int. Cl. F28b *3/00*

U.S. Cl. 165—111 **7 Claims**

In air-cooled condensation apparatus having a natural-draft cooling tower, condensation elements are disposed not only at the outer periphery of the cooling tower but also in at least

one ring located in the interior of the cooling tower coaxially to the condensation elements at the outer periphery, the cooling elements located in the interior of the cooling tower being operable in winter dephlegmatorically, i.e., with steam flowing into the cooling tower from below.

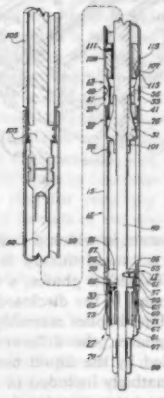


3,776,307

APPARATUS FOR SETTING A LARGE BORE PACKER IN A WELL

James Douglas Young, Fort Worth, Tex., assignor to Gearhart-Owen Industries, Inc., Fort Worth, Tex.

Filed Aug. 24, 1972, Ser. No. 283,322
Int. Cl. E21b *23/04, 43/10*
U.S. Cl. 166—125 **9 Claims**



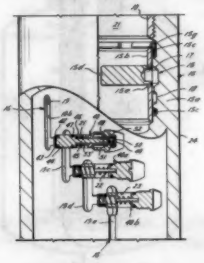
Apparatus for setting a large bore packer in a well penetrating subterranean formations characterized by a packer assembly including an expansible liner that can be expanded into contact with the conduit, such as casing, of the well for tight sealing engagement without requiring setting anchors or the like; connector means that is connected with the liner at one end and connected with a seal sub at the other end, the seal sub having an unusually large bore for receiving a sealing relationship a large bore, or seal unit; and settable retainer, such as slips and cones, for effecting a supplementary retaining force in addition to that of the expanded liner for setting the large bore packer at a given depth and retaining it there against unusually large forces. Also disclosed is a combination of the apparatus with setting tool, swage, and retainer setting means, as well as specific preferred embodiments.

3,776,308

SAFETY VALVE ARRANGEMENT FOR CONTROLLING COMMUNICATION BETWEEN THE INTERIOR AND EXTERIOR OF A TUBULAR MEMBER

Billy C. Malone, Houston, Tex., assignor to Lynes, Inc., Houston, Tex.

Filed Aug. 17, 1971, Ser. No. 172,447
Int. Cl. E21b *33/12*
U.S. Cl. 166—187 **2 Claims**



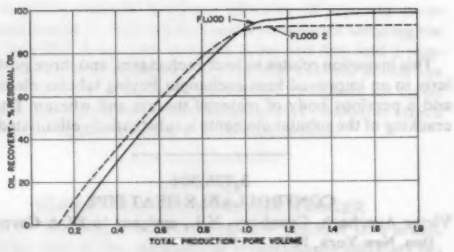
An arrangement for controlling fluid communication between the interior of a tubular member and interior of an inflatable element supported externally on the tubular member including fluid passage means communicating from the interior of the tubular member to the interior of the inflatable element with valve means normally seated to close off flow from the interior of the tubular member to the interior of the inflatable element until a predetermined pressure has been exerted thereon. After the valve has been opened to communicate fluid from the interior of the tubular member to the interior of the inflatable element for inflation thereof, the valve closes when a predetermined relationship is reached between the pressure in the interior of the tubular member and externally of the tubular member. Locking means are provided to lock the valve in closed position and prevent further communication between the interior of the tubular member and interior of the inflatable element when the valve closes.

3,776,309

VISCOUS SURFACTANT WATER FLOODING

Kenneth J. Murray, East Brunswick; Don J. Hopkins, Westfield, and Peter B. Lederman, Providence, all of N.J., assignors to Esso Production Research Company, Houston, Tex.

Continuation of Ser. No. 845,126, July 23, 1969, abandoned.
This application May 28, 1971, Ser. No. 148,127
Int. Cl. E21b *43/22*
U.S. Cl. 166—273 **25 Claims**



A method of treating a formation by means of a well using a novel composition as a waterflood additive. The method is primarily used as a method for recovering oil from the formation, but also has utility in increasing the water injectivity of a well by reducing the formation's residual oil saturation. The

composition is prepared by reacting hydrocarbons of the type occurring in a 700°–1,100°F boiling range fraction of a petroleum crude with gaseous SO_3 under specific sulfonating conditions. The composition is essentially a mixture of hydrocarbon sulfonates which has the properties of reducing the interfacial tension and increasing the viscosity of certain aqueous systems.

3,776,310

POLYALKENEOXIDES AND POLYVINYL-PYRROLIDONES MOBILITY CONTROL AGENT AND PROCESS

Charles J. Norton, and David O. Falk, both of Denver, Colo., assignors to Marathon Oil Company, Findlay, Ohio

Filed May 6, 1971, Ser. No. 140,931
Int. Cl. E21b *43/22*
U.S. Cl. 166—275 **7 Claims**

In a supplemented oil recovery process and other uses, flow resistance of aqueous polyalkeneoxide solutions, e.g., Polyox WRS-301, can be increased by adding high molecular weight homopolymers, or random block or heteropolymers of polyvinylpyrrolidones.

3,776,311

METHOD OF CONTROLLING LOOSE SANDS AND THE LIKE

James D. Carnes; Bill M. Young, and Kenneth D. Totty, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sept. 25, 1972, Ser. No. 292,050
Int. Cl. E02d *3/14*; E21b *33/138*
U.S. Cl. 166—295 **52 Claims**

The present invention relates to an improved method of controlling loose or incompetent sands and the like in a subterranean formation wherein a hydrocarbon liquid, having a consolidating fluid dissolved and dispersed therein to control the viscosity and spread of the consolidating fluid is introduced into the formation and the consolidating fluid is caused to harden thereby consolidating loose sands into a permeable mass.

3,776,312

WELL BOTTOM TREATMENT

Akos Ban; Sandor Nagy, both of Budapest, and Valer Balint, Nagykanizsa, all of Hungary, assignors to Koolaj-es Gazipari Tervezo Vallalat, Budapest, Hungary

Filed Oct. 28, 1971, Ser. No. 193,593
Claims priority, application Hungary, Oct. 6, 1970, KO 2368
Int. Cl. E21b *43/24, 43/26*
U.S. Cl. 166—302 **3 Claims**

Microcracks are formed in the environs of deep drilled wells, such as oil wells, by heating and then cooling the adjacent strata. This can be accomplished by introducing ammonia into the stratum water at the bottom of the well. The resulting heat of dissolution will slightly heat the strata adjacent to the bottom of the well as the ammonia will chemically assist the displacement of recoverable materials lodged in these strata. The cooling to the initial temperature of the bottom can be accomplished by the presence of additional stratum water in the well.

3,776,313

TEMPERATURE RESPONSIVE AUTOMATIC FIRE EXTINGUISHER

Joseph S. DePalma, 109 Carlson Ct., Closter, N.J.

Filed Feb. 4, 1972, Ser. No. 223,507
Int. Cl. A62c *13/00*
U.S. Cl. 169—19 **13 Claims**

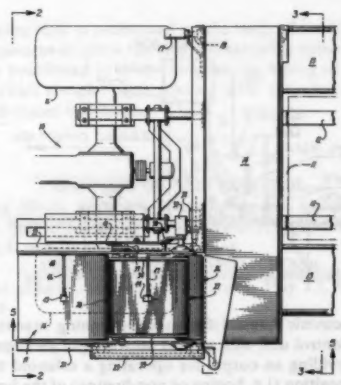
An automatic fire extinguisher having a heat-sensitive assembly mounted on a conventional fire extinguisher container. Heat sensors are operably connected to a housing which contains a bellows and valve arrangement. Within the sensors, housing and surrounding the bellows is a fluid which expands in response to heat which causes the bellows to collapse and move a valve to an open position permitting fire extinguisher material to excape through a nozzle provided in the container. A squeeze grip manual actuator is provided for manipulating the valve at any time.

3,776,314

SOD HANDLING METHOD

John F. Nunes, Jr., 2006 Loquot Ave., Patterson, Calif.

Division of Ser. No. 807,594, March 17, 1969, Pat. No. 3,664,432. This application Mar. 2, 1972, Ser. No. 231,160
Int. Cl. A01b *79/00*
U.S. Cl. 172—1 **3 Claims**



A machine is shown which pursues a method following the steps of continuously advancing a length of sod along a path, reversing the direction of movement of one of the portions of the sod relative to the movement of another portion of the same length of sod while conjointly therewith elevating the reversed portion with respect to the other portion so as to initiate folding one of the portions onto the other.

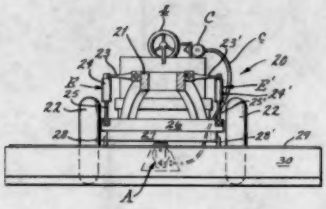
ERRATUM

For Class 172—2 see:
Patent No. 3,776,322

3,776,315
PENDULUM LIGHT SENSOR

Raymond E. Gill, and Floyd J. McMahon, both of Peoria, Ill., assignors to Westinghouse Air Brake Company, Peoria, Ill.

Filed Dec. 17, 1971, Ser. No. 209,327
Int. Cl. E02f 3/76
U.S. Cl. 172—4.5 13 Claims

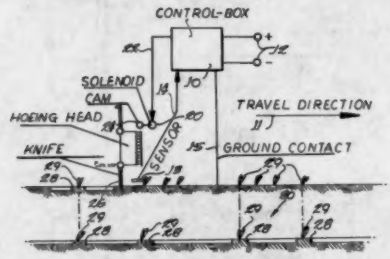


A pendulum light sensor mounted on the cutting tool of a surface finishing machine for automatically adjusting the angle of the cutting tool upon the raising and lowering of same to effect a deeper or shallower cut; said sensor incorporating a liquid chamber within which is disposed a bubble housing having a switch control arm attached thereto for opening and closing a photoelectric cell switch within the housing upon rotatable movement of said cutting tool. The photoelectric cell switch is in circuit with an elevator mechanism for raising and lowering the cutting tool to maintain the angle of the cutting tool at a predetermined attitude above the ground surface at all times.

3,776,316
ELECTRONIC CONTROL FOR CROP THINNING

Russell C. Eberhart, Manhattan, Kans., assignor to Allied Farm Equipment, Inc., Chicago, Ill.

Filed Jan. 5, 1972, Ser. No. 215,554
Int. Cl. A01b 63/00
U.S. Cl. 172—6 11 Claims

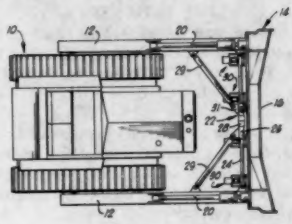


An electronic control for a crop thinning machine comprises a control unit with a plant sensor input and control circuitry providing an output for operating a solenoid that controls the position (i.e. hoeing or non-hoeing) of the hoeing implement. The control circuitry is of solid state components and includes a series of interacting timing circuits for programming the operation of the hoeing implement in a predetermined manner. Independent plant sensing and timing circuitry are provided for each of a plurality of rows being thinned. In one mode of operation the machine is hoeing until a plant is sensed. The plant is left in place after which hoeing takes place unconditionally for a preset distance. The hoeing continues until the next plant is sensed, which is left in place, and the cycle is repeated. In another mode of operation the hoeing implement is in its non-hoeing position. The first plant sensed is left in place following which hoeing takes place unconditionally over a preset distance after which the hoeing implement is moved back to its non-hoeing position until the next plant is sensed. The cycle then repeats. A simple mode-selection switch is employed for quickly changing modes during field operation.

3,776,317
EARTH EXCAVATING APPARATUS

Clady J. Royer, P.O. Box 75181, Oklahoma City, Okla.

Filed May 17, 1971, Ser. No. 143,828
Int. Cl. E02f 3/12
U.S. Cl. 172—777 9 Claims

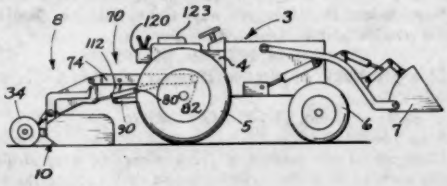


An earth working apparatus which includes a self-powered vehicle having a pair of blade-supporting mounting arms pivotally supported on opposite sides thereof, and extending forwardly from the vehicle. A bulldozer blade is mounted on the forward ends of these arms in front of the vehicle, and has a sliding center ball brace assembly extending transversely across the rear side of the blade from one end thereof to the other, and spaced upwardly from the lower edge of the blade. A plurality of scarifier teeth are pivotally mounted in brackets secured along the backside of the blade below the ball brace assembly, and adjacent the lower side of the blade.

3,776,318
EARTH WORKING MACHINE INCLUDING SCRAPER BLADE MEANS

Jack D. Layton, Salem, Oreg., assignor to Layton Manufacturing Company, Salem, Oreg.

Filed Mar. 22, 1972, Ser. No. 237,187
Int. Cl. E02f 3/12
U.S. Cl. 172—777 13 Claims



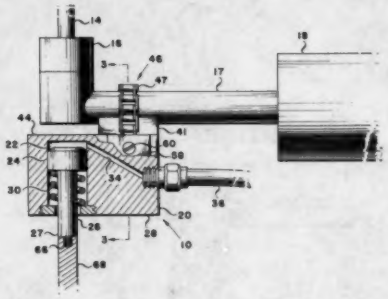
An earth working machine for towing at the rear of a tractor having an elongated scraper blade means extending transversely of the machine. Ground-traveling wheels are provided to the rear of the blade means, with hydraulically operated rams in the mounting for the wheels enabling adjustment of their elevation with respect to the blade means. The blade means has an internal pivot enabling extremities to be tilted to different relative adjusted positions about a horizontal axis extending from the front to the rear of the machine. Blade extensions are extendible from opposite ends of the blade means and the support wheels may also be shifted laterally outwardly. Different movements in the machine are remotely controlled by the operator of the tractor. The machine, through draft arm structures, is towed by the tractor, such structures connecting with the tractor frame in advance of the rear tractor wheels. A connection with the hydraulic lift arms of the tractor enables the machine to be raised from the ground.

3,776,319

IMPROVEMENT IN AN ACCESSORY FOR A RIGHT-ANGLE DRILL TOOL

Alfred G. Richter, Jr., Granada Hills, Calif., assignor to Lockheed Aircraft Corporation, Burbank, Calif.

Filed Jan. 19, 1972, Ser. No. 219,043
Int. Cl. E21c 5/11; B23b 45/14, 41/00
U.S. Cl. 173—36 3 Claims



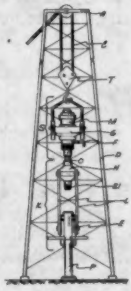
A portable accessory for mounting on a right-angle motorized drill tool whereby steady force to the tool's drill bit is supplied by means of reaction of its plunger, actuated pneumatically or hydraulically, against fixed bracing structure. The plunger is mounted on a reciprocable piston in the chamber of its cylinder or casing which is secured in a cooperative manner to a station along the length of the drill tool, preferably directly behind and in line with the axis of the drill bit. The cylinder is connected to a source of fluid power, say, by way of a three-way valve connected to an adapter fitted to the tool motor's ingress port, the portable ram thus being operated by the same source. An adjustable link chain mounted to the cylinder secures the device to the station on the drill tool. Upon operation of the drill tool, regulated pressure is fed to the ram through incorporation of the three-way valve in the circuit to the cylinder's chamber thereby actuating or reciprocating the plunger in a direction opposite to the line of drilling by the drill bit. The fixed bracing structure is engaged by the plunger's exposed free end, or extension thereto, causing a force reaction in the direction of the drill bit. This accessory provides stability to the tool in a drilling operation, accuracy of position, and ease in drilling a hole, particularly in a hard metal, examples of which are titanium and Inconel 714.

3,776,320

ROTATING DRIVE ASSEMBLY

Cicero C. Brown, 8490 Katy Freeway, Houston, Tex.

Continuation-in-part of Ser. No. 130,597, April 2, 1971. This application Dec. 23, 1971, Ser. No. 211,463
Int. Cl. E21b 19/07
U.S. Cl. 173—163 29 Claims



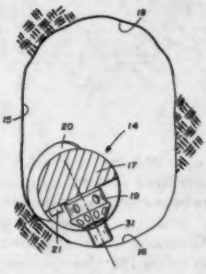
A rotating drive assembly which may be supported on a vertically movable traveling block suspended in a well derrick. The drive assembly may comprise an elevator assembly adapted for non-threaded engagement with a tubular member, for handling and transmitting torque thereto, and a power source connected to the elevator assembly for rotation thereof. The elevator assembly may comprise a tubular housing having a longitudinal section removed therefrom to provide a side opening whereby the tubular member may be laterally placed in the housing for substantially coaxial alignment therewith. A set of arcuate shoes having teeth thereon may be mounted in the housing. The shoes and housing may be provided with cooperable cam devices for camming the shoe teeth into tight gripping engagement with the tubular member upon rotation of the housing in either direction relative to the tubular member. The rotating drive assembly may also comprise a threaded drive member between the elevator assembly and power source for threaded engagement with threads on one end of tubular members to be driven by said rotating drive assembly.

3,776,321

TURNING SLIDE FOR OPEN HOLE OPERATION

Piero Wolk, Houston, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Oct. 17, 1972, Ser. No. 298,225
Int. Cl. E21b 49/04
U.S. Cl. 175—4 6 Claims



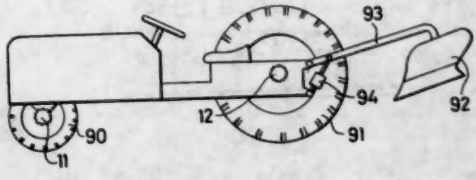
A turning slide is positioned on the body of a sidewall sampling apparatus to allow the sidewall sampling apparatus to be properly positioned in a borehole for the taking of a sample. The sidewall sampler with turning slide may be effectively used in deviated boreholes.

3,776,322

ELECTRONIC SLIP CONTROL

Wolfgang Misch, Stuttgart; Helmut Domann, and Karl-Heinz Adler, both of Leonberg, all of Germany, assignors to Robert Bosch G.m.b.H., Stuttgart, Germany

Filed May 6, 1971, Ser. No. 140,690
Claims priority, application Germany, May 13, 1970, P 20 23 346.9
Int. Cl. A01b 41/06
U.S. Cl. 172—2 9 Claims



The outputs of two r.p.m. signal generators connected respectively to the driven and the undriven axles are fed to

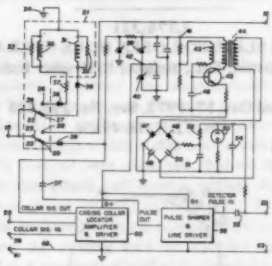
respective pulse shapers, the outputs of which are conducted to an analog divider that provides an output indicative of the slip between the two axles. This output operates a hydraulic control for raising and lowering the plow.

3,776,323

SYSTEM FOR OPERATING AN ELECTRICAL DEVICE AND A SELECTIVELY FIRED PERFORATOR UTILIZING A COMMON TRANSMISSION CHANNEL

William H. Spidell, and Billy F. Wilson, both of Houston, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Filed May 11, 1972, Ser. No. 252,442
Int. Cl. E21b *43/119*
U.S. Cl. 175—4.51 8 Claims



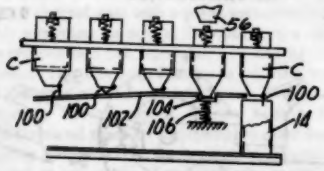
An electrically operated device in a subsurface well instrument and selectively fired perforating guns in the subsurface well instrument are operated using a single conductor cable. A switching means incuding a double pole, double throw latching relay allows the single conductor cable to be electrically connected to either the electrically operated device or the selectively fired perforator. Upon command from the surface, the switching means will couple the appropriate subsurface unit to the surface electronics and the subsurface unit may be actuated to perform the desired operation in the well.

3,776,324

AUTOMATIC LOADER FOR CARTONS

Andrew W. Bruestle, 5812 N. 6th St., Philadelphia, Pa.

Filed Nov. 16, 1972, Ser. No. 307,169
Int. Cl. G01g *13/02, 13/24, 13/16*
U.S. Cl. 177—116 3 Claims



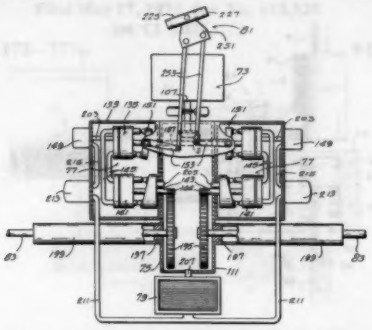
A machine provided with means for automatically feeding bulk commodities to a delivery spout, means for automatically weighing the material delivered at said spout and means for automatically loading the desired weight of material into cartons.

3,776,325

ALL-TERRAIN VEHICLE

Herbert A. Jespersen, Lincoln, Nebr., assignor to Outboard Marine Corporation, Waukegan, Ill.

Division of Ser. No. 857,494, Sept. 12, 1969, abandoned. This application Nov. 27, 1970, Ser. No. 93,471
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.48 7 Claims



Disclosed herein is an all-terrain vehicle including a body, a power generating and transmission group, and a track suspension group, each of which can be separately initially fabricated and subsequently assembled. After assembly of the power generating and transmission group and the track suspension group to the body, a motor hood, drive sprocket, and tracks may additionally be assembled to complete the vehicle.

Also disclosed herein is a track suspension system affording both transverse and lateral resiliently flexible support to an endless track and a releasably locked and pivotally mounted rear bogie wheel assembly which, when pivoted from its normal operating position, affords assembly of or removal of the endless track relative to the sprocket and bogie wheels.

Also disclosed herein is a track sprocket affording maximum open area for the escape of mud, snow, ice and the like.

Also disclosed herein is a hydrostatic transmission including a control having a reverse lock-out preventing accidental movement of the control into position effecting reverse operation.

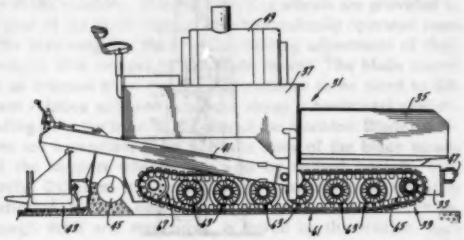
Still further, there is disclosed herein a hydraulic oil circulating system which utilizes the gear box as a sump for the circulating system and which is in heat exchanging relation with an air circulating system.

3,776,326

PAVING MACHINE

Donald R. Davin, Shelbyville, and Gary H. Beckley, Mattoon, both of Ill., assignors to Blaw Knox Construction Equipment, Inc., Mattoon, Ill.

Division of Ser. No. 889,542, Dec. 31, 1969, Pat. No. 3,700,288. This application June 28, 1972, Ser. No. 267,229
Int. Cl. B62d *55/00*
U.S. Cl. 180—9.2 R 4 Claims



An asphalt paving machine mounted on rubber tread tracks. Each track is equally tensioned hydraulically. Each track is

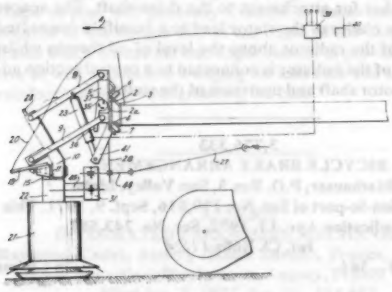
made of shoes which are individually connected to band sections. Replaceable rubber inserts are fastened to each shoe. Replaceable retainers connected to each shoe engage bogie wheels which are attached to bogie carriages pivotally mounted on a torsionally flexible machine frame. A drive sprocket for each track is directly driven by a separate hydrostatic transmission with the sprocket supporting the track shoes and bands to maintain a constant pitch diameter for the track. The gear train between the hydrostatic motor and the sprocket is completely enclosed. A manual automatic engine speed control system is provided which automatically brings the paving machine engine to idle speed when the paving machine is stopped and brings the engine to its governed speed whenever the paving machine is moved. A closed center hydraulic system supplies fluid to operate power actuators.

3,776,327

POWER-TAKEOFF ASSEMBLY FOR CONNECTING FARM IMPLEMENTS TO A VEHICLE

Emil Klopfer, Engen; Martin Stelzle, Gottmadingen, and Edwin Schneble, Gailingen, all of Germany, assignors to Maschinenfabrik Fahr AG, Gottmadingen, Germany

Division of Ser. No. 821,707, May 5, 1969, Pat. No. 3,612,574.
This application Oct. 28, 1970, Ser. No. 84,873
Claims priority, application Germany, May 14, 1968, P 17 57 480
Int. Cl. B62d *59/02*
U.S. Cl. 180—14 B **1 Claim**



A self-propelled farm vehicle, e.g., a crop-pickup loader or wagon, is fitted with a horizontal profiled bumper of noncircular cross section along which an implement hitch or support can ride. This support is provided with a hydraulic cylinder which operates a parallelogrammatic linkage connected to a generally upright member which can be lifted or lowered relative to the bumper or crossbar. A generally cylindrical coupling bolt having a narrow end is mounted on this vertical member and is adapted to engage in a confronting hole on a farm implement. A locking pawl catching in a groove on the bolt holds the implement in place while allowing it to swing from side to side to a limited extent. A power-takeoff shaft is journaled in a plate pivoted about a horizontal axis on the bumper and is coupled with a pivotal chain transmission on the implement.

ERRATA

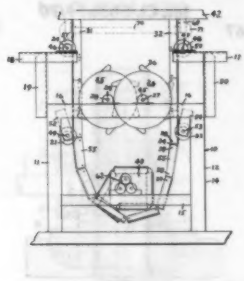
For Classes 180—27 thru 184—15 see:
Patents Nos. 3,776,353 thru 3,776,369

3,776,328

ELEVATING MECHANISM

Karol T. Dyczynski, 109 E. 29th St., Erie, Pa.

Filed May 23, 1972, Ser. No. 255,991
Int. Cl. B66b *11/04*
U.S. Cl. 187—17 **10 Claims**



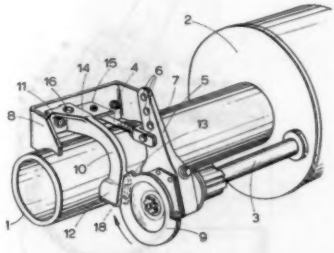
An elevating mechanism made up of a frame. A collecting device is rotatably supported at the lower part of the frame and three chains made up of links are wound around the collector in spaced relation to each other. The center chain is wound in the opposite direction from the other chains and the links are swingably connected together and fixed to move in a definite path. All three chains are connected at their distal ends to the bottom of a platform so that when the chains are unrolled from the collector, they push the platform up in a manner of an elevating mechanism. All three chains are connected at their proximal end to the platelike member of a collecting device.

3,776,329

BRAKE WEAR AND ADJUSTMENT DEVICE

Frederick John Charles Hope, Chobham, Woking, and James Malcolm Pigney, Bracknell, both of England, assignors to Self Energizing Disc Brakes Limited, Datchet, Buckinghamshire, England

Filed Feb. 15, 1972, Ser. No. 226,427
Claims priority, application France, Feb. 19, 1971, 7109697
Int. Cl. F16d *66/02*
U.S. Cl. 188—1 A **9 Claims**



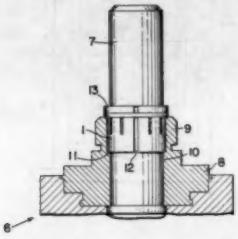
A device for indicating the condition of the brakes of a vehicle is provided which enables the driver to determine whether the brakes are properly adjusted and brake linings are badly worn. The device includes an electrical switch located remotely from the brake lining and which is arranged to be automatically operated to energize an indicator when the lining has worn to a predetermined extent and a second electrical switch which is arranged to be automatically operated when brake adjustment is required. Each of the switches is activatable by variation of a magnetic field.

3,776,330

BRAKING DEVICE FOR ADJUSTMENT APPARATUS

Rudi Theodoor De Jongh, Munich, and Helmut Oskar Stickdorn, Hohenkirchen, both of Germany, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed June 15, 1972, Ser. No. 263,236
Claims priority, application Germany, June 25, 1971, P 21 31 654.1
Int. Cl. B65h 59/10
U.S. Cl. 188—67 5 Claims



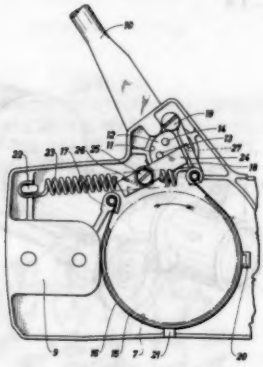
A braking device for use with adjustment apparatus such as a potentiometer having a movable shaft partially encompassed by a housing member. A braking element is concentrically positioned around the periphery of the shaft between the shaft and the encompassing surface of the housing member. A portion of the braking element has spaced-apart slits extending from an edge of the element across part of the width of the element. These slits form radially resilient segments frictionally engaged with both the periphery of the shaft and the encompassing surface of the housing member.

3,776,331

BRAKE-DEVICE FOR POWER SAWS

Lennart Gustafsson, Goteborg, Sweden, assignor to Aktiebolaget Partner, Fack, Sweden

Filed Apr. 11, 1972, Ser. No. 242,978
Claims priority, application Sweden, Apr. 13, 1971, 4771/71
Int. Cl. B60t 13/04
U.S. Cl. 188—166 6 Claims



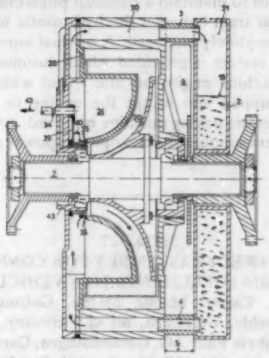
A brake device for power saws having a supporting handle and a driving mechanism drum with a trigger means operable by an operator's hand moving from said handle and striking a pivotal yoke adjacent said handle when the saw is inadvertently flung to one side during use, which yoke releases a pawl means normally retaining braking means around the drum in a non-braking position to allow resilient means to move the braking means to a drum braking position.

3,776,332

HYDRAULIC SPEED CHECKER AND COOLING MEANS

Jean D'Assignies, Chateau des Astiers, Saint Heand (Lorie), France

Filed Sept. 30, 1971, Ser. No. 185,007
Int. Cl. F16d 57/02
U.S. Cl. 188—290 4 Claims



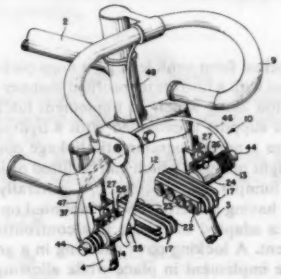
A hydraulic turbo speed checker for use for example on a drive shaft of a road vehicle, comprising a bladed rotor rotatable within a bladed stator carried within a sealed casing connected to an adjacent sealed radiator unit. The radiator unit has an aperture therethrough to accommodate a shaft on which the rotor is mounted, said shaft projecting on either side of the checker for attachment to the drive shaft. The spaces between the blades of the stator lead to a manifold connected to the top of the radiator above the level of oil therein whilst the bottom of the radiator is connected to a central section adjacent the rotor shaft and upstream of the stator.

3,776,333

BICYCLE BRAKE ARRANGEMENT

William R. Mathauser, P.O. Box 5, Sun Valley, Idaho

Continuation-in-part of Ser. No. 179,016, Sept. 9, 1971. This application Apr. 13, 1972, Ser. No. 243,587
Int. Cl. B60z 11/24
U.S. Cl. 188—344 26 Claims

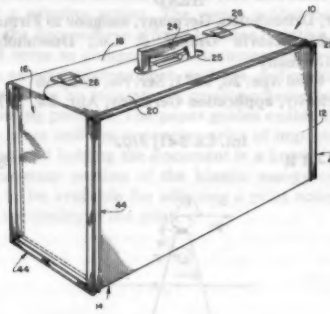


A bicycle brake arrangement in which each of the front and rear wheel forks adjustably carry a pair of hydraulic slave cylinder-piston units, one unit of each pair being on an opposite side of a wheel rim with each unit having brake shoe means associated therewith for movement toward and away from a wheel rim, there being an independent fluid transmission line from each of two hydraulic master cylinder-piston units to the respective pairs of front and rear wheel associated slave cylinder-piston units and a hand operated control means for pressurizing both master cylinder-piston units to actuate the brakes.

3,776,334
CARRYING CASE WITH A TRIMMING AND REINFORCEMENT FRAME ON THE ENDS OF CASE

Mandel A. Doppelt, 7218 Kedvale Ave., Lincolnwood, Ill.

Filed May 11, 1972, Ser. No. 252,266
Int. Cl. B23p *17/00*
U.S. Cl. 190—41 R 2 Claims

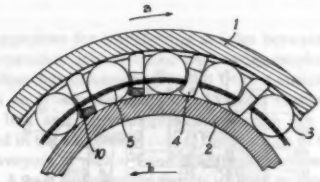


A carrying case including a pair of spaced side walls, a bottom, and spaced end walls wherein the end walls are provided with side and bottom flanges extending generally perpendicular to the plane of the end walls which are secured adjacent the outer edges of the side walls and bottom wall of the case, and wherein a frame or edge molding member, generally U-shape in plan and generally U-shape in transverse section is secured to the flanges and to the edges of the case to form a frame which covers the end edges thereof to provide a decorative as well as protective edging for said case and to provide a reinforcement for strengthening the case.

3,776,335
INTEGRATED FREEWHEEL MECHANISMS

Raymond Cadet, Annecy (Haute Savoie), France, assignor to Societe Nouvelle de Roulements, Annecy, France

Filed Jan. 3, 1972, Ser. No. 214,652
Claims priority, application France, Jan. 14, 1971, 7101122
Int. Cl. F16d *11/06*
U.S. Cl. 192—41 5 Claims

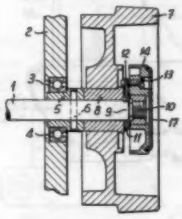


An integrated freewheel mechanism characterized in that it comprises between an outer race and an inner race a plurality of rolling elements and a plurality of wedging cams having their front and back surfaces consist at least partially of parallel planes, the surfaces of said cams which engage said inner and outer races being at least partially cylindrical, said cams being each disposed between two adjacent rolling elements and urged for engagement with said inner race through resilient means.

3,776,336
SCREW OPERATOR FOR CLUTCH WITH ADJUSTABLE STOP

Marcel Fresard, Petit-Lancy, Switzerland, assignor to Mefina S.A., Fribourg, Switzerland

Filed Apr. 6, 1972, Ser. No. 241,753
Claims priority, application Switzerland, Apr. 20, 1971, 5715/71
Int. Cl. F16d *19/00*
U.S. Cl. 192—95 6 Claims

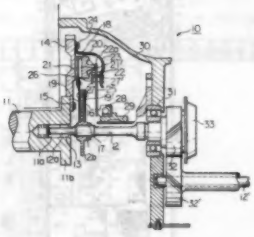


A shaft has at one end, a threaded portion, a cylindrical portion and a drive bush fixed thereto. The fly-wheel is mounted to rotate on the cylindrical portion of the shaft, a clamping block being screwed on the threaded portion to clamp the fly-wheel against the drive bush to lock it in rotation on the shaft. The possible angle of rotation of the block on the shaft is limited by a screw threaded in any one of at least two bores of the block to come into cooperation with a stop finger fast in rotation to the shaft and extending radially with respect to the latter. The bores are parallel to the axis of the shaft. The screw can be positioned in that one of the bores which provides the most favourable angle of rotation of the block between the coupling position of the fly-wheel and its uncoupled position.

3,776,337
DRY-DISC FRICTION CLUTCH

Katuyuki Yoshizawa, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed Dec. 27, 1971, Ser. No. 212,185
Claims priority, application Japan, June 22, 1971, 46/53758
Int. Cl. F16d *13/44, 13/58*
U.S. Cl. 192—110 B 10 Claims



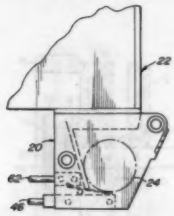
In order to prevent retarded or incomplete disengagement of the clutch disc from the engine flywheel due to deteriorated sliding engagement between the transmission input shaft and the clutch hub splined thereto and due to the axial thrust imparted to the transmission input shaft as a result of the rotation of the left-hand helical main drive gear on the input shaft, the clutch is provided with pressure means which is adapted to urge the transmission input shaft away from the engine crankshaft thereby to overcome or cancel such axial thrust on the transmission input shaft.

3,776,338

CREDIT PULSE GENERATING SYSTEM FOR VENDING MACHINES

Kurt Theodore Johnson, Palatine, Ill., assignor to The Seeburg Corporation of Delaware, Chicago, Ill.

Filed Feb. 3, 1972, Ser. No. 223,147
Int. Cl. G07f 5/10
U.S. Cl. 194—9 R 13 Claims



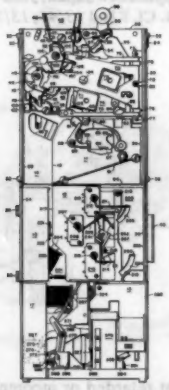
A system is provided in which the momentum of a moving credit indicator, such as a coin or token, is directed against a mechanically deformable converter, such as a piezoelectric crystal, to produce a signal pulse utilized in determining credit to be granted a vending machine customer. A separate compartment with an associated piezoelectric crystal is provided for each type of credit indicator deposited in the vending machine. The individual components of the system in each compartment are easily assembled and at least a number thereof are maintained in position without soldering or other fastening procedures until the compartments are assembled into a composite unit.

3,776,339

CONTROL APPARATUS FOR DUAL PRICE VENDING MACHINE

Raymond D. Bowman, Ringgold, Ga., assignor to Cavalier Corporation, Chattanooga, Tenn.

Filed July 21, 1972, Ser. No. 273,961
Int. Cl. G07f 5/16
U.S. Cl. 194—10 29 Claims



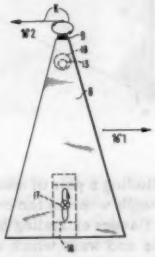
A dual price coin changer and vend control circuit for an article vending machine establishes credit at one of two prices. The prices may be preset with a price spread of up to 30 and a payout motor energized upon vend selection effects payout of correct change. A split pricing cam is indexed in accordance with the value of coins deposited in the vending machine. Microswitches positioned to be actuated in accordance with the position of the split cam control energization of price relays of the vend control circuit to enable low or high price vend selection of selected articles from a multiplicity of columns, in accordance with the value of coins deposited in the vending machine.

3,776,340

RECORDING INSTRUMENT WITH MOSAIC PRINTING HEAD

Erich Moser, Deisenhofen, Germany, assignor to Firma RENA Buromaschinenfabrik GmbH & Co., Dusenhofen near Munich, Germany

Filed Apr. 20, 1971, Ser. No. 135,566
Claims priority, application Germany, Apr. 24, 1970, P 20 20 127.8
Int. Cl. B41j 3/02
U.S. Cl. 197—1 R 8 Claims



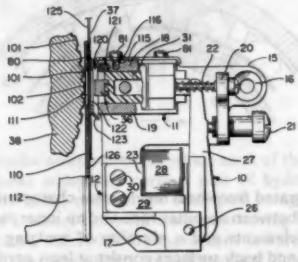
A mosaic printing head for a line-dot printing system. The printing head carrying a plurality of driveable printing rods is caused to move bodily through an orbit which is so related to relative translative movement between the printing head and printing medium that at the moment of printing impact such relative movement is made zero. Thus clear punching of the printing medium is possible and same is accomplished without damage thereto.

3,776,341

PRINTER PAPER GUIDE WHICH COMPENSATES FOR THE THICKNESS OF DOCUMENT PACK

Richard G. Dobner, Webster, and Donald G. Hebert, Pittsford, both of N.Y., assignors to The Singer Company, New York, N.Y.

Continuation of Ser. No. 142,702, May 12, 1971, abandoned.
This application Mar. 7, 1973, Ser. No. 338,776
Int. Cl. B41j 13/00
U.S. Cl. 197—127 R 1 Claim



An improved document support system for use in a character by character printer of the type that employs a rear striking hammer to drive the document, at the printing posi-

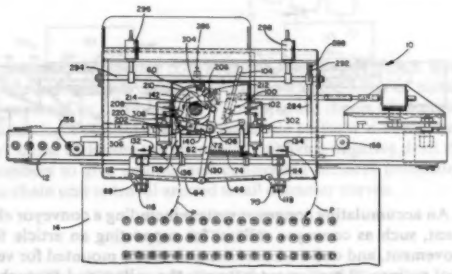
tion, into contact with a selected symbol on a rotating type font. Typically, the type font would be on the surface of a constantly rotating wheel. In application, a front paper guide is provided which limits and defines the normal spacing between the document and the type font in the area of the printing position; the said spacing normally being quite small. A rear paper guide is supported by the hammer structure and is spring biased towards the front paper guide. Both paper guides include cutouts or openings so that the printing hammer can drive the document towards the selected character of the font to effect a printing action. The paper guides cooperate to maintain the document in a fixed location, relative to the type font, and serve to compress the document pack which may comprise an original document, carbons, and multiple copies, so that there are no separations, or air pockets, therebetween at the printing position. The paper guides enable the production of a more uniform appearing print of improved quality. Supporting and holding the document in a known position allows a constant portion of the kinetic energy of the print hammer to be available for affecting a print action, thus increasing the quality of the print.

3,776,342

APPARATUS FOR TRANSFERRING ARTICLES BETWEEN MOVING CONVEYORS

Constantine W. Kulig, Windsor, and Alexander H. Rydlewicz, Manchester, both of Conn., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 27, 1972, Ser. No. 221,176
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 R **6 Claims**



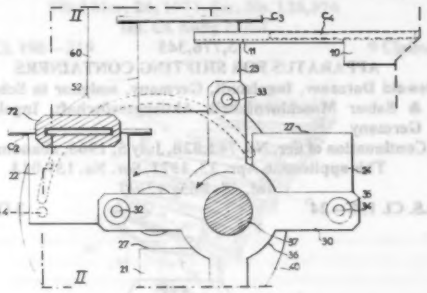
An apparatus for transferring articles between two moving and perpendicularly oriented conveyors employs a parallel-crank, four-bar linkage suspended from a structural frame to support an article clamping mechanism. The motions of the orbital link and the clamping mechanism are synchronized with and in the same direction as the motions of the articles on the conveyors at pick-up and discharge positions on the conveyors. A cam drive mechanism is utilized to modulate the orbital speeds of the link in systems in which the two conveyors operate at different speeds. An elevating mechanism is also driven in synchronism with the four-bar linkage to raise and lower the linkage and the clamping mechanism at the pick-up and discharge positions. The clamping mechanism incorporates rotatable shafts to open and close a plurality of resilient fingers which engage the articles with a controlled degree of pressure. A cam and cam follower operated by the four-bar linkage adjust the amounts by which the resilient fingers open and close at both the pick-up and the discharge positions.

3,776,343

TRANSFER DEVICE FOR CIGARETTES AND SIMILAR OBJECTS

Jean-Claude Gouy, Chaville, France, assignor to Service d'Exploitation Industrielle des Tabacs et des Allumettes, Paris, France

Filed Feb. 9, 1972, Ser. No. 224,683
Claims priority, application France, Feb. 11, 1971, 7104614
Int. Cl. B65g *15/30*
U.S. Cl. 198—20 C **3 Claims**



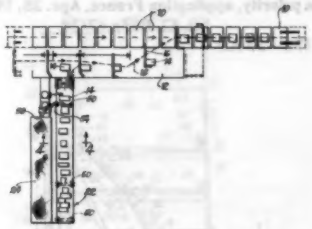
Transfer device for cigarettes or similar objects fed as a continuous stream along a rectilinear feeding path having a given set direction and designed to transfer them in succession to a receiving means at a receiving point at which said receiving means has a velocity in a direction substantially perpendicular to said feeding path, comprising prehensory members for objects on their feeding path, means for driving said prehensory members on a closed path meeting said feeding path and passing through said receiving point and imparting to said members at the meeting point with said feeding path, a velocity having a direction different from that of said path but having a component on that path at least equal to the velocity of said objects on their feeding path.

3,776,344

ARTICLE INDUCTION SYSTEM

John Harrison, Lincolnwood, Ill., assignor to The Spra-Con Company, Chicago, Ill.

Filed Mar. 10, 1972, Ser. No. 233,596
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 **14 Claims**



A system for handling articles which are to be moved from a supporting surface to a receiving area comprising an article engaging paddle and associated drive means. The drive means comprise a conveyor for moving the paddle over the supporting surface with the paddle in article engaging position. The conveyor automatically locates the paddle out of article engaging position upon return movement of the paddle, and then brings the paddle into position for engaging a succeeding article on the supporting surface. The paddle is preferably

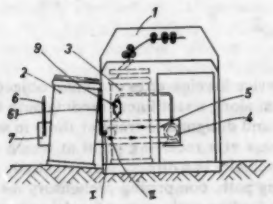
pivotally connected relative to the conveyor and a cam is positioned for engaging the paddle just prior to its movement into article engaging position. This cam serves to maintain the end of the paddle within relatively small lateral limits whereby the paddle can be inserted into article engaging position without sacrificing space requirements in the construction. The provision of the paddle is particularly useful in systems employing high speed conveyors as the supporting surface since the paddle insures movement of articles along the conveyor even if the conveyor surface should slip beneath an article located thereon.

3,776,345

APPARATUS FOR SHIFTING CONTAINERS

Oswald Dotzauer, Ingolstadt, Germany, assignor to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Continuation of Ser. No. 742,828, July 5, 1968, abandoned.
This application Apr. 23, 1971, Ser. No. 137,013
Int. Cl. B65g *47/00*
U.S. Cl. 198—24 **3 Claims**



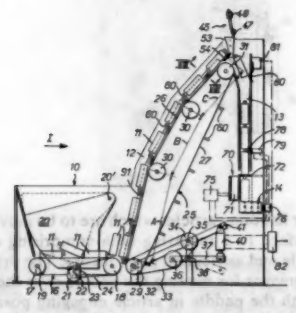
A container is advanced by an arm or forked shifter guided by a reciprocating carriage or a crank driven by a motor. The drive motor is de-energized with the carriage in a position of such that the shifter is backed slightly away from the container. The shifter is then swung upward out of the container path and returned to its starting position. Alternatively a clutch may disengage the motor and crank at dead center and a compression or torsion spring effects backing off of the shifter from the container.

3,776,346

AUTOMATIC BOTTLE HANDLING MACHINES

Louis Gilbert Dubuit, 60 Rue Vitruve, Paris, France

Filed Apr. 26, 1972, Ser. No. 247,626
Claims priority, application France, Apr. 28, 1971, 7115110
Int. Cl. B65g *47/24*
U.S. Cl. 198—33 AD **9 Claims**



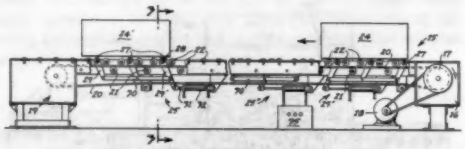
A device for automatic handling and orientation of bottles for delivery to a work station. The device comprises a storage tub into which bottles are dumped, the bottom of the tub having a plurality of conveyors thereon. A corresponding plurality of channels each having a conveyor extending into the tub in the vicinity of a corresponding one of the conveyors therein. A selective reversing device disposed at the downstream end of the each of the channels and including a brush with bristles in the path of movement of the bottles for holding a bottle momentarily if it is in open end first position and for turning it over before entering a corresponding drop chute or if it is in closed end first position, for pushing the brush out of the way and in either case enabling the bottle to fall in closed end first position into its corresponding drop chute. A delivery conveyor disposed at the bottom of the drop chute for carrying bottles upright to a work station. The device further comprises a sensing device disposed at the upper end of each drop chute, a compartmented transfer member having as many compartments as there are corresponding drop chute, the transfer member having a retaining plate extending transversely for blocking bottles from falling to the delivery conveyor in a first position and for allowing them to drop to the delivery conveyor in a second position, and retractable abutments disposed at the height of at least one bottom above the retaining plate for regulating the passage in the drop chutes to the retaining plate.

3,776,347

ACCUMULATING CONVEYOR

Hewlett M. Sawrie, c/o H. M. Sawrie & Co., P.O. Box 4205, Chattanooga, Tenn.

Filed Apr. 12, 1972, Ser. No. 243,189
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **8 Claims**



An accumulating conveyor system including a conveyor element, such as conveyor rollers, for supporting an article for movement, and one or more lifting elements mounted for vertical reciprocal movement between the rollers and through a plane including the bottom surface of the article, and control means for reciprocably moving the lifting elements to raise the article above the rollers for deceleration, stopping, indexing or accumulation of the article, and for lowering the lifting elements below the plane of the bottom surface of the article in a retracted or inoperative position, without interfering with the operation of the conveyor rollers.

3,776,348

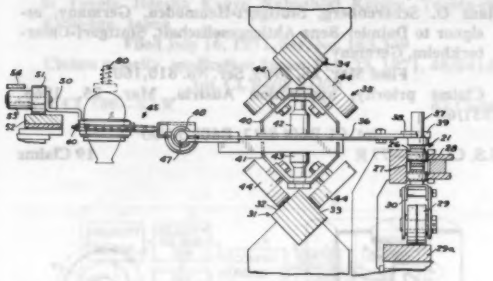
GLASS MAKING MACHINERY

Louis P. Yakubek, and George R. Obenshain, both of Perrysburg, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Oct. 22, 1970, Ser. No. 82,987
Int. Cl. B65g *15/00*
U.S. Cl. 198—131 **57 Claims**

A glass making machine and particularly a heat treat machine wherein open-ended hollow glass articles are supported on carriages moved in an endless path by a conveyor. Each carriage pivotally supports a plurality of heads which, in turn, rotatably support the hollow glass articles. The conveyor

moves the carriages and in turn the articles through a plurality of work zones of heat treatment including heating, quenching

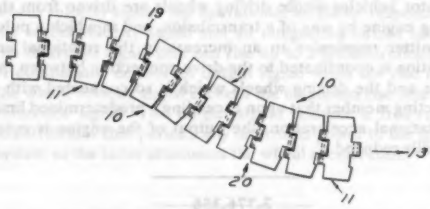


and cooling zones. As the articles are moved through a work zone, the supports on the heads are rotated to rotate the articles.

3,776,349
FABRICATED FLEXIBLE CONVEYOR CHAIN

Richard H. Kampfer, St. Paul, Minn., assignor to Conveyor Specialties Company, St. Paul, Minn.

Filed June 25, 1969, Ser. No. 836,358
Int. Cl. B65g *17/06*
U.S. Cl. 198—195 **1 Claim**

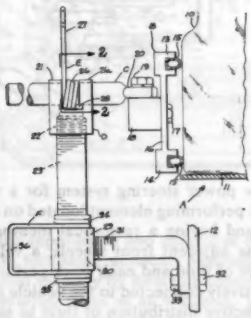


A fabricated flexible conveyor chain is provided from solid construction which can be made from a single piece of metallic material or can be made from separate sheets of material permitting different types of materials to form a completed link units, including the advantage of having negative draft rib members to give guiding and controlling surfaces permitting the chain unit to travel around small diameter curves.

3,776,350
GUIDE RAIL SUPPORT

Joseph Tice, 502 Poinsettia Dr., Simpsonville, S.C.

Filed June 8, 1972, Ser. No. 260,830
Int. Cl. B65g *15/60*
U.S. Cl. 198—204 **5 Claims**

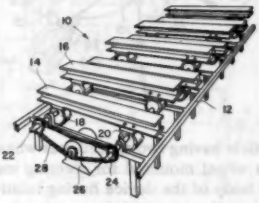


A guide rail for conveyors and the like, which can be readily adjusted with a spring in a horizontal direction to accommodate bottles of various sizes being shifted along on the conveyor. A spring means is also provided for adjusting the vertical position of the guide rail relative to the conveyor.

3,776,351
WALKING BEAM CONVEYOR AND ECCENTRIC CONSTRUCTION THEREFOR

Wick D. Erb, c/o City Machine and Welding Co., 448 Andrews Ave., Youngstown, Ohio

Filed Mar. 26, 1971, Ser. No. 128,376
Int. Cl. B65g *25/04*
U.S. Cl. 198—219 **9 Claims**

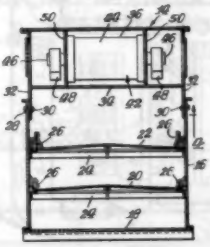


The invention relates to a walking beam conveyor and an improved eccentric construction therefor. The conveyor consists of a series of parallel extending beams each of which are connected to two shafts by eccentrics with alternate ones of the beams being connected in a 180° phase relationship. The eccentric units each consist of upper and lower eccentric housings which are provided with interlocking means and an eccentric keyed to the shaft and received within the housing. Spring retaining rings are employed to retain the eccentric within the housing and to retain the housing sections in aligned relationship. Nylon bearing pads are also provided in the housings and are retained by the snap rings.

3,776,352
SEALED DRIVE FOR VIBRATORY MATERIAL HANDLING DEVICE

Albert Musschoot, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed July 8, 1971, Ser. No. 160,681
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 DB **1 Claim**



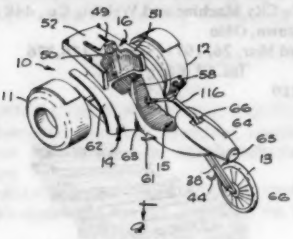
A vibratory material handler including a material handling surface, a mechanism for vibrating the same and a housing sealing the vibrating mechanism from particulate material in the surrounding environment. The housing includes an apertured wall through which the motor shaft may extend and which is held in substantial abutment with the motor casing. The remainder of the housing holds a weighted member eccentrically mounted on the shaft and shields the same from particulate material while the substantial abutment of the wall at the motor casing effects a substantial seal between the two to preclude entry of particulate material into the motor itself.

3,776,353

THREE WHEELED MOTOR VEHICLE

Edward Roth, Box 511, Maywood, Calif.

Filed Apr. 12, 1971, Ser. No. 133,170
Int. Cl. B62d 61/08
U.S. Cl. 180—27 14 Claims



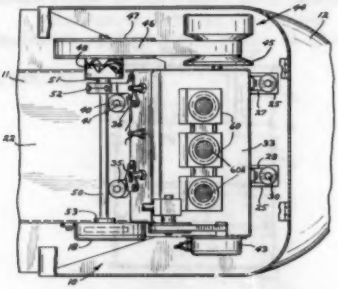
A motor vehicle having two spaced rear wheels and a single centered front wheel mounted for steering movement, with the frame and body of the device having relatively wide rear portions between the two wheels carrying and enclosing a driving motor, and having narrower forwardly projecting portions carrying a driver's seat at a location at which the driver's legs straddle those portions, with the forwardly projecting portion of the frame extending upwardly toward its forward end to connect pivotally to a fork mounting the front wheel. A second seat is desirably located back of and at a lever higher than the driver's seat, with the driver's seat preferably being located lower than, and the second seat preferably being located higher than, the level of the tops of the rims of the rear wheels.

3,776,354

SNOWMOBILE ENGINE AND TORQUE CONVERTER MOUNT

Marley J. Ducio, and Michael E. Baker, both of Brooten, Minn., assignors to Brutanza Engineering, Inc., Brooten, Minn.

Filed Mar. 2, 1972, Ser. No. 230,736
Int. Cl. B60k 5/04
U.S. Cl. 180—64 R 9 Claims



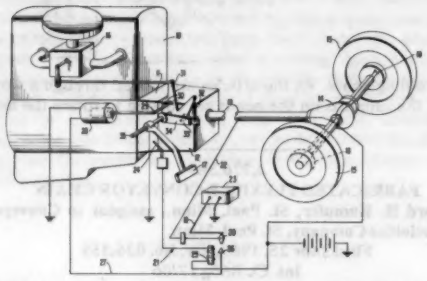
A mounting structure for the engine and torque converter of a snowmobile, which makes the engine and torque converter a separate unit. The engine-torque converter unit is then mounted to the frame of the machine through vibration isolation bushings. The unit mounting eliminates misalignment of the torque converter drive belt. The mounting also reduces fatigue failure of snowmobile chassis because both the drive and driven pulleys are connected to the engine, and the chassis does not have to carry the high belt load as is required when the pulley forming the torque converter is separately mounted from the engine.

3,776,355

INSTALLATION FOR THE PREVENTION OF SLIPPING OF THE DRIVE WHEEL OF MOTOR VEHICLES

Hans O. Scherenberg, Stuttgart-Heumaden, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Mar. 25, 1969, Ser. No. 810,160
Claims priority, application Austria, Mar. 25, 1968, 2931/68
Int. Cl. B60t 8/12; B60k 31/00
U.S. Cl. 180—77 R 19 Claims



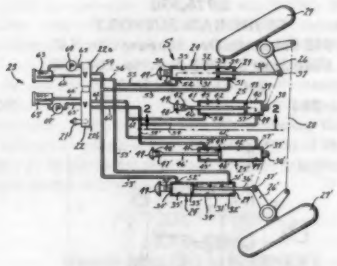
An installation for preventing slippage of the driving wheels of motor vehicles whose driving wheels are driven from the driving engine by way of a transmission, and in which a pulse transmitter responsive to an increase in the rotational acceleration is coordinated to the drive connection between the engine and the driving wheels which is so connected with a correcting member that upon exceeding a predetermined limit of rotational acceleration, the output of the engine is automatically reduced.

3,776,356

EQUAL FLOW DUAL STEERING SYSTEM

Jimmie J. France, Roanoke, Ill., assignor to Westinghouse Air Brake Company, Peoria, Ill.

Filed Mar. 9, 1972, Ser. No. 233,182
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 R 6 Claims



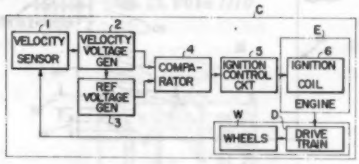
An equal-flow power steering system for a vehicle incorporating: a work performing element located on opposite sides of the vehicle and having a reciprocal member operatively connected to the adjacent front wheels; a valve interposed between a source of fluid and each work performing element and being operatively connected to the vehicle steering wheel for effecting selective distribution of fluid to each work performing element; and a structural element associated with each work performing element to assure equal displacement of fluid from said source of fluid.

3,776,357

ANTI-SKID CONTROL SYSTEM

Hiroshi Arai, and Jun Ohta, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Filed July 16, 1971, Ser. No. 163,349
Claims priority, application Japan, Feb. 23, 1971, 46/8414
Int. Cl. B60k *31/00*
U.S. Cl. 180—82 R 42 Claims



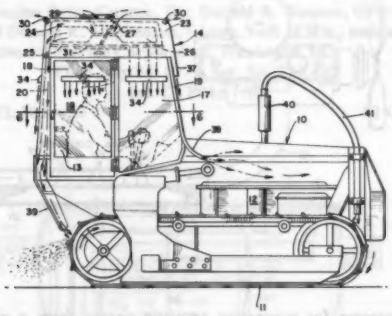
In the anti-skid system disclosed, a vehicle's wheel is protected from skidding in response to rapid acceleration, by comparing the wheel velocity with a reference signal that follows the wheel velocity but only within a predetermined maximum rate of velocity rise, and by then attenuating the wheel's drive to slow its acceleration. According to one embodiment of the invention a wheel velocity voltage generator generates a wheel velocity signal. An operational amplifier responding to the wheel velocity signal and an integrating circuit establish the reference signal that can rise up to a predetermined rate. A comparator derives an output signal when the rise rate in the wheel velocity signal exceeds the maximum rise rate of the reference signal. The output signal releases a free-running multivibrator that periodically interrupts power to the ignition system so the latter attenuates the wheel acceleration.

3,776,358

CAB FOR AGRICULTURAL TRACTORS AND THE LIKE

Cyril G. Williams, Box 246, Plains, Mont.

Filed Apr. 12, 1972, Ser. No. 243,186
Int. Cl. B62d *25/16*; B60j *9/04*
U.S. Cl. 180—84 12 Claims



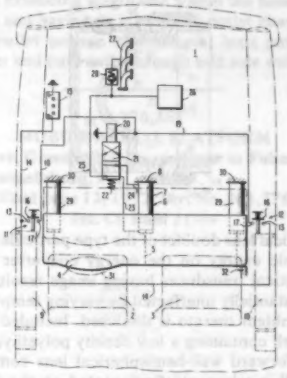
A cab for the suppression and control of dust protects the operator while furnishing adequate ventilation and cooling and assures good visibility by directing continuous streams of air over the exterior faces of all windows. The cab features hollow walls at the sides and rear and an overhead fan compartment with ventilation controls. The fan may be driven from the tractor hydraulic system.

3,776,359

INSTRUMENT PANEL FOR VEHICLES

Werner Breitschwerdt, Stuttgart, Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Aug. 17, 1972, Ser. No. 281,279
Claims priority, application Germany, Aug. 17, 1971, P 21 41 148.3
Int. Cl. B60k *37/00*; B60r *21/02*
U.S. Cl. 180—90 34 Claims



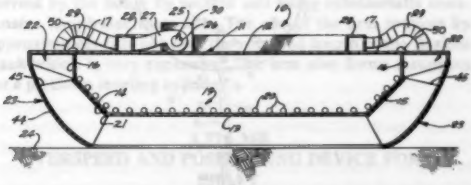
An instrument panel for motor vehicles, especially with a negative profile formed approximately in accordance with the contours of a person seated facing the same, which is automatically displaceably arranged in the vehicle longitudinal direction in such a manner that with the opening of a front door, the instrument panel is displaced into a forward position remote from the driver and/or co-driver, and with the closing of the front doors is displaced into a rearward position close to the driver and co-driver; at least one damping member is provided which is supported, on the one hand, at the instrument panel and, on the other at a relatively fixed vehicle part and which is preferably constructed in the manner of a shock absorber.

3,776,360

AIR CUSHION VEHICLE WITH RETRACTABLE SKIRT ASSEMBLY

Edward O. Anders, Houston, and Lloyd G. Nichols, Missouri City, both of Tex., assignors to Global Marine Inc., Los Angeles, Calif.

Filed July 7, 1972, Ser. No. 269,858
Int. Cl. B60r *1/16*
U.S. Cl. 180—127 20 Claims



An air cushion vehicle has a body in which a peripheral skirt assembly is retractable from an operative position, in which the skirt assembly surrounds a space below the bottom of the body, to a retracted position in which the body side surfaces are exposed substantially to the body gunwale. The skirt assembly is provided as a plurality of skirt sections. The skirt assembly is arranged so that the hover height of the vehicle may be increased by movement of the skirt sections through the initial portion of their movement from their deployed positions to their retracted positions.

3,776,361
ACOUSTIC LENS

Albert L. Rolle, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

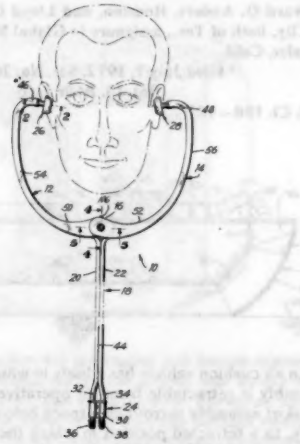
Filed Apr. 6, 1972, Ser. No. 241,602
Int. Cl. G01v 1/16
U.S. Cl. 181—.5 A 15 Claims

An acoustical lens doublet of the type particularly useful for focusing sonic energy on the energy converter array of an electroacoustical transducer having image resolution powers that are substantially unaffected by varying temperatures and pressures ambient thereto is disclosed. Included therein is a rearward shell containing a low density polyethylene acoustically clear forward wall-hemispherical lens combination. A forward shell is telescopically mounted on the front end of said rearward shell, with the forward end of said forward shell having a thin low density polyethylene acoustically clear window located therein. An interface fluid, preferably consisting of a predetermined quantity of m-chloroanoline ($ClC_6H_4NH_2$), is located under a predetermined pressure within a chamber effected between the forward ends of said rearward and forward shells, as a result of the telescopic relationship thereof.

3,776,362
STETHOSCOPE HEADSET

Arthur A. Rice, 199 Robby Ln., New Hyde Park, N.Y.

Filed May 26, 1972, Ser. No. 257,168
Int. Cl. A61b 7/02
U.S. Cl. 181—24 4 Claims

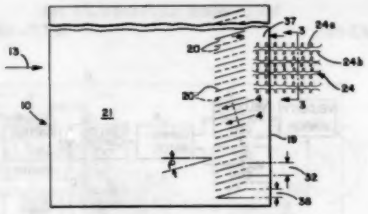


Stethoscope-type headset for conducting sound from a remote location to a user's ears which is adjustable to fit widely varying individuals while being yet comfortable to all such individuals and secure during all normal head movement.

3,776,363
CONTROL OF NOISE AND INSTABILITIES IN JET ENGINES, COMPRESSORS, TURBINES, HEAT EXCHANGERS AND THE LIKE

Arnold M. Kuethe, 490 Barton North Dr., Ann Arbor, Mich.

Filed May 10, 1971, Ser.No.141,617
Int.Cl.F01d5/16; B64c 23/06
U.S. Cl. 181—33 C 12 Claims

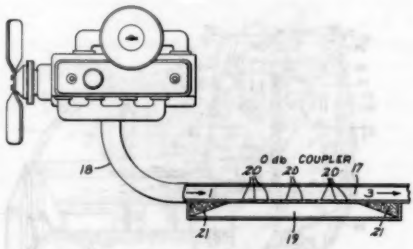


Intrinsic sound, noise and instabilities directly or indirectly due to the shedding of cross-stream vortices caused when air or fluid moves over the trailing edge of a plate, blade, vane or the like are reduced by the formation of relatively steady-state streamwise vortices upstream of the terminal edge. The invention is applied to turbine and compressor blades, jet tube inlets and exits, heat-exchanger tubes and the like by placing or forming streamwise vortex-inducing generators within the boundary layer on the shedding item so that the induced streamwise vortices trail off of the trailing edge and suppress the formation of cross-stream disturbances. Through this process, noise disturbances which would otherwise amplify to high sound intensitites and/or large flow disturbances, high structural stresses and loss of efficiency through passage over successive shedding items are suppressed in their early stages of development.

3,776,364
NOISE REDUCTION APPARATUS AND METHOD

Richard E. Van Doeren, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Filed Apr. 28, 1972, Ser. No. 248,676
Int. Cl. F01n 1/00
U.S. Cl. 181—48 19 Claims



Apparatus for separating acoustic energy from a moving fluid is shown. The apparatus includes a directional acoustic coupler comprising first and second side-by-side conduits having coupling elements in a common wall thereof. The first conduit carries the fluid and acoustic energy. The coupling elements couple a pre-selected portion of the energy from the first conduit into the second conduit without disturbing the flow of fluid. In one embodiment, the second conduit is provided with sound absorbing material. In another embodiment,

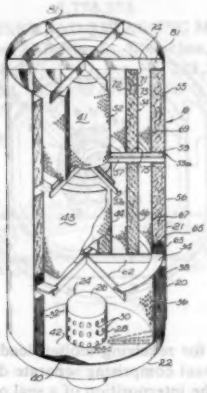
a pair of symmetrical acoustic couplers are used as phase shifters in a noise cancellation circuit. In yet another embodiment, a single coupler is designed to reflect the acoustic energy back toward the source without restricting the flow of fluid. This invention has particular utility in the field of exhaust silencing.

3,776,365

FLUID BLOW-OFF SILENCER

John F. Richards, Santa Paula, Calif., assignor to Fluid Kinetics Corporation, Ventura, Calif.

Filed Jan. 14, 1972, Ser. No. 217,857
Int. Cl. F01n 1/10
U.S. Cl. 181—50 5 Claims



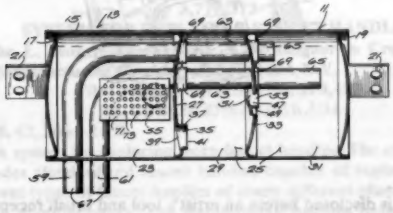
A generally-cylindrical blow-off silencer is disclosed to be used, for example, on a vent, as from a high-pressure fluid system. A diffuser unit receives fluid from the vent and divides it into a multiplicity of separate streams which are directed radially to impinge upon a housing that is lined with acoustic material, at least a portion of which material is provided to dampen the housing. Scoria (light-weight, permeable, porous mineral) is disclosed as a liner pack, to dampen, seal and absorb sound-energy, in combination with glass-fiber material, which also is employed in an acoustic-core structure.

3,776,366

EXHAUST MUFFLER

E. Douglas Betts, Gurnee, Ill.; Donald R. Hanson, Greendale, and Donald K. Stephenson, Sussex, both of Wis., assignors to Outboard Marine Corporation, Waukegan, Ill.

Filed July 24, 1972, Ser. No. 274,445
Int. Cl. F01n 1/08
U.S. Cl. 181—57 12 Claims



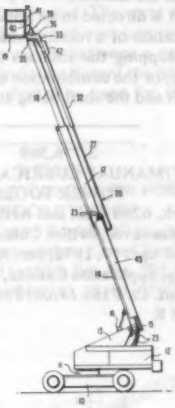
Disclosed herein is a muffler comprising an elongated housing including a generally cylindrical side wall and, at each end thereof, an inwardly concavely dished end wall, and a dished partition dividing the housing into an inlet chamber and an outlet chamber and extending convexly with respect to the inlet chamber, together with a beveled port which is located in the partition, which extends from the inlet chamber into the outlet chamber and which includes a tubular part having a length extending parallel to the length of the housing and being formed, at least in part, by the material of the partition with an inlet having a margin which merges with the partition and which has an arcuate form in a plane extending radially of the length of the tubular part, and an outlet tube including an inlet portion extending lengthwise within the housing through the partition and having an inlet in the outlet chamber and including an outlet portion extending at least partially in the inlet chamber and outwardly through said side wall.

3,776,367

MOBILE AERIAL PLATFORM

John L. Grove, Greencastle, Pa., assignor to Fulton Industries, Inc., McConnellsburg, Pa.

Filed June 12, 1972, Ser. No. 261,775
Int. Cl. B66f 11/04
U.S. Cl. 182—2 8 Claims



A mobile aerial platform embodies a multi-section telescopic boom upon which a self-leveling operator platform is mounted. Hydraulic and electrical controls for the machine on the operator platform require the use of hydraulic hoses and electrical cables external to the boom and extending between the platform and the boom base section. A flexible hose and cable guidance, positioning and protecting track extends from the boom base section to the lower extremity of a rigid arm carried by the boom fly section and being substantially coextensive lengthwise therewith. The use of the arm reduces by approximately fifty per cent the required length of the flexible track which is very expensive. The arm also forms a support for a platform leveling cylinder.

3,776,368

OVERSPEED AND POSITIONING DEVICE FOR A SHAFT

Albert Brauss, 7517-196th Ave. N.E., Redmond, Wash.

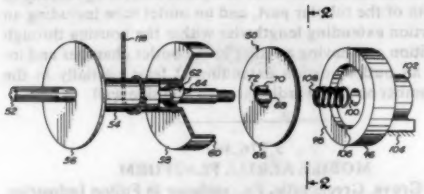
Filed Dec. 13, 1971, Ser. No. 207,139
Int. Cl. E04g 3/10
U.S. Cl. 182—19 49 Claims

In certain situations a rotating shaft may rotate too rapidly or be positioned at a precarious angle so as not to be operating in a safe manner.

Under these operating conditions it is necessary to control the angular speed of the rotating shaft or to control the angle of the rotating shaft.

An example of a shaft rotating too rapidly or being positioned at a precarious angle is one where there is a scaffold, on a building, suspended by cables from the top of the building. The winch or winches for winding and unwinding these cables may be on the suspended scaffold or may be on a carriage on the roof of the building.

If the winches unwind too rapidly the scaffold descends too rapidly with possible injury to the people riding the scaffold.



Also, if the cables attached to the scaffold assume different lengths, then the angle of the scaffold may be such that the occupants of the scaffold may slide to one end of the scaffold and even slide off the scaffold.

This invention is directed to an apparatus and a method for stopping the rotation of a rotating shaft which is rotating too rapidly or for stopping the rotation of a rotating shaft at a precarious angle, or the combination of too rapid a rotation of the rotating shaft and the shaft being at a precarious angle.

3,776,369

AUTOMATIC/MANUAL LUBRICATION SYSTEM FOR POWER TOOLS

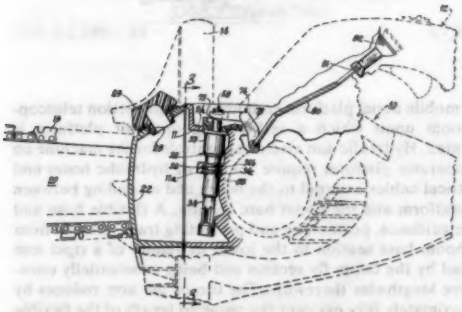
Frank C. Schrack, 6388 Elm, and Arthur Lee, 694 Beachview Dr., both of Vancouver, British Columbia, Canada

Filed Apr. 17, 1972, Ser. No. 244,633

Claims priority, application Canada, Apr. 15, 1971, 110399

Int. Cl. F16n *13/08*; F01m *1/04*

U.S. Cl. 184—15 R **10 Claims**



The internal combustion engine of a portable chain saw includes a liquid lubricant reservoir which is in communication with the crankcase of such engine for being pressurized thereby. A cylindrical subassembly is mounted in this reservoir and includes a spring-biased ball valve adjacent an inlet opening, which opening is normally immersed in the liquid lubricant. This subassembly includes an outlet communicating with a passageway to the cutting chain to be lubricated. When the internal combustion engine is running, the pressurized lubricant unseats the ball valve thereby automatically lubricating the cutting chain by a metered flow of lubricant past the ball valve. The cylindrical subassembly includes a piston pump which is manually actuated from a lever adjacent the control quadrant of the portable tool. Each actuation of this lever causes the ball to be unseated and a quantity of the liquid lubricant to be supplied to the cutting chain for manual lubrication before starting the internal combustion engine; when the engine is running, operation of this lever increases the flow of oil to the cutting chain.

3,776,370

PUNCH WHEEL IN MACHINES FOR COMPOSING LEAD TYPE LINES

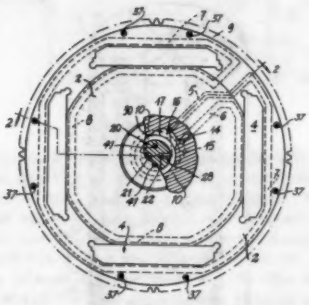
Daniele Menta, Via Friuli 38, Milan, Italy

Filed June 27, 1972, Ser. No. 266,615

Claims priority, application Italy, July 10, 1971, 26879 A/71

Int. Cl. B41b *11/54*

U.S. Cl. 199—56 **5 Claims**



A mold wheel for receiving molten lead to compose lead type lines, the wheel comprising separate discs connected to each other with the interposition of a seal or gasket. Grooves are provided in the discs and extend adjacent the holes intended to accomodate the molds for lead pouring, water flowing through said grooves and assuring an efficient cooling both for the wheel and molds and thus for the lead being poured therein.

3,776,371

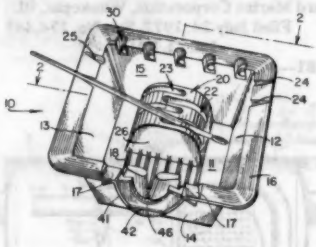
ARTIST'S TOOL AND BRUSH RECEPTACLE AND CONDITIONER

Harrison K. Linger, 7412 Springvale Dr., Louisville, Ky.

Continuation-in-part of Ser. No. 69,565, Sept. 4, 1970, Pat. No. 3,671,992, and a continuation-in-part of Ser. No. 866,471, Oct. 15, 1969, Pat. No. 3,650,589. This application May 12, 1972, Ser. No. 252,876

Int. Cl. B44d *3/00*; B65d *1/34*

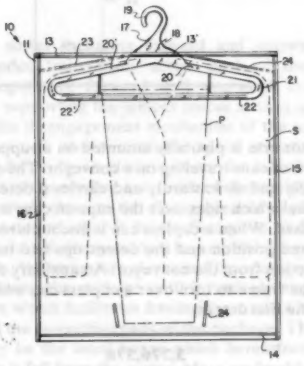
U.S. Cl. 206—1.7 **16 Claims**



There is disclosed herein an artist's tool and brush receptacle and conditioner comprising an open receptacle having a bottom wall and an upstanding continuous side wall. A base member is disposed in the receptacle and has an upper surface terminating below the upper edge of the side wall. The base member has at least one inclined groove in the surface

thereof, with the lower portion of the groove being disposed above the bottom wall. The upper portion of the groove is larger in cross-section than the lower portion of the groove. The side wall has at least one slot in the upper edge thereof, the slot facing the groove, with the longitudinal axis of the slot lying in substantially the same vertical plane as the longitudinal axis of the groove. Upon the placement of an associated artist's brush on the receptacle with the outer end of the handle of the brush disposed in the slot and the lower portion of the handle of the brush disposed in the groove, the groove operates to support the brush above the bristles thereof while maintaining the bristles of the brush above the bottom wall of the receptacle and substantially out of contact with any portion of the receptacle.

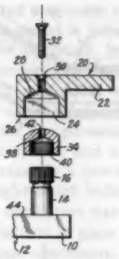
3,776,372
CONTAINER AND RETAINING MEANS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Filed Feb. 3, 1972, Ser. No. 223,279
Int. Cl. B65d *85/18, 33/14*
U.S. Cl. 206—7 H **9 Claims**



A flexible container, apparatus and method for producing same are provided, the container being particularly applicable for the sealed retention of articles of clothing. The walls of the container are made of flexible, heat sealable plastic film forming an envelope about the contents. In a preferred form, the envelope is totally sealed so as to seal the contents therein to protect them for mildew and insects such as moths. A holding and hanging device, such as a plastic or metal wire hanger, extends partly into the container while a hooked portion thereof passes through an opening in the upper seam of the container. If the hanger is made of plastic, it may be heat sealed to the plastic film to totally enclose the interior of the bag. If the hanger is made of wire, the plastic film may be heat bonded thereto to hermetically seal the interior of the container.

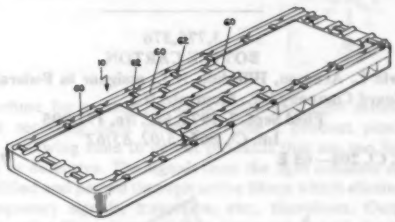
3,776,373
SYSTEM FOR REPLACING FAUCET HANDLES
John L. Mullen, Lindenhurst, N.Y., assignor to Crest Good Manufacturing Company, Inc., Syosset, N.Y.
Filed July 10, 1972, Ser. No. 270,459
Int. Cl. B65d *85/62*; G01b *3/34*
U.S. Cl. 206—16 R **6 Claims**

A system for replacing worn faucet handles. The system includes standardized faucet handles capable of replacing different types of faucet handles of many different plumbing fixture manufacturers. The standardized handles have interior recesses of the same non-circular cross section for receiving adaptors of the same external cross section matching that of the handle recesses. The adaptors however are provided with internally toothed recesses which have different characteristics for matching the different splined ends of valve stems of different manufacturers. A gauge is used for selecting a proper adaptor, this gauge being in the form of a plate formed with a series of toothed openings all of which have different characteristics. These openings can be tried one after the other on the splined end of a given valve stem until an opening



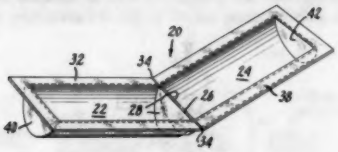
is found which has a snug precise fit with respect to the particular splined end which is tested. The plate which forms the gauge carries adjacent the several openings indicia for identifying the different adaptors, so that once a proper opening is found on the gauge, the indicia adjacent the latter opening will indicate which adaptor should be used for the standardized handle.

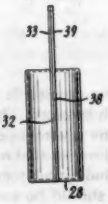
3,776,374
ANTI-THEFT DISPLAY CONTAINER FOR MAGNETIC TAPE CARTRIDGE
Roger L. Medendorp, Grand Rapids, Mich., assignor to Kirkhof Manufacturing Corporation, Grand Rapids, Mich.
Filed Aug. 31, 1972, Ser. No. 285,343
Int. Cl. B65d *5/50, 25/10, 85/67*
U.S. Cl. 206—45.14 **17 Claims**



The container includes a one-piece tray and one-piece cover vacuum-formed of a very thin transparent sheet of thermoplastic each having side and end walls which glove together. The height and width of the container corresponds to an eight-track magnetic tape cartridge and the tray is partitioned into two compartments one of which receives and holds the eight-track cartridge, the other alternatively a four-track cartridge. The latter compartment includes differential-pressure formed, irregularly shaped portions in the bottom of the tray which support the four-track cartridge above the bottom wall and in from the side walls of the tray to compensate for the dimensional differences between a four and eight-track cartridge. The tray and cover include intersecting flutes of dissimilar depths greatly increasing the protection of the packaged cartridge without decreasing absorption of shock in directions transverse to the walls of the compartments. The cover includes window portions for effective display of the packaged cartridge.

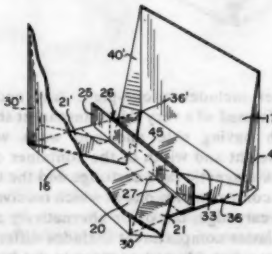
3,776,375
FREE-STANDING BLISTER PACKAGE
Howard A. Rohdin, Popponesset Island, Mass., assignor to Packaging Industries Inc., Hyannis, Mass.
Filed Jan. 25, 1972, Ser. No. 220,594
Int. Cl. B65d 25/54, 73/00
U.S. Cl. 206—45.34 11 Claims





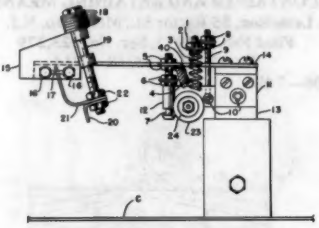
A free-standing package of the blister type includes an article containing enclosure formed of a single piece of self-supporting plastic material. The enclosure is in two mating sections integrally joined along a fold line traversing what becomes the base of the completed package. The free edges of the sections have flanges which meet when the sections are closed to envelop the article and the sections are sealed together along the flanges. At the same time, the initially folded base portion is flattened out to provide a support for maintaining the package article in an upright position. The plastic enclosure may be used with or without a display card.

3,776,376
BOTTLE CARTON
Edwin L. Arneson, Hillsdale, N.J., assignor to Federal Paper Board Company Inc., Montvale, N.J.
Filed Sept. 7, 1971, Ser. No. 177,995
Int. Cl. B65d 5/02, 85/62
U.S. Cl. 206—65 E 7 Claims



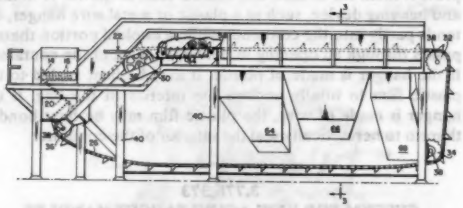
A wraparound sleeve-type container or carrier for bottled goods which is formed of a single blank and wrapped around a cluster of bottles arranged in double row formation with the ends of the blank adapted to be connected on a center line beneath the cluster of bottles and providing an upstanding row divider, with the blank having triangular panels for partially closing opposite axial ends of the carton which are hinged to the end edges of the side walls and which have integral tabs hinged to bottom edges and positioned so as to lie on the top faces of the bottom panel members with end portions in abutting engagement with the row divider and disposed beneath the end bottles in the carton, thereby precluding inadvertent unfolding of the end panels which hold the lower portions of the end bottles against movement out of the ends of the carton.

3,776,377
CAPLESS CAN DETECTING AND TURNING APPARATUS
Henry G. Lane, 3816 Avenue Q N.W., Winter Haven, Fla.
Filed Jan. 17, 1973, Ser. No. 324,510
Int. Cl. B07b 13/04
U.S. Cl. 209—73 5 Claims



A detector arm is pivotally mounted on a supporting frame above a row of cans traveling on a conveyor. The arm is movable upwardly and downwardly and carries a detent and a detecting wheel which rides over the caps on cans while keeping the arm raised. When a capless can is encountered, the arm is in its lowered position and the detent tips and turns over the can for ejection from the conveyor. An auxiliary detent is provided on the frame to turn over a capless can which has been tipped by the first detent.

3,776,378
LOG SORTER
Bruce F. Booth, Kenogami, Quebec; Pierre Veilleux, Arvida, Quebec, both of Canada, and Richard William Hall, Aberdeen, Wash., assignors to Enterprises International, Inc., Hoquiam, Wash.
Filed May 25, 1972, Ser. No. 257,008
Int. Cl. B07b 13/04
U.S. Cl. 209—73 4 Claims

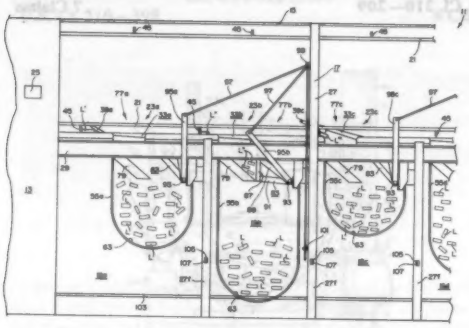


A log sorter for sorting logs according to length for delivery of the required length logs to a wood grinding mill or other desired location and the over and under length logs to chippers or other use location comprises a conveyor support table extending along a path of travel of the logs and a flight conveyor extending along the conveyor support table for receiving logs in random fashion and conveying them first to a butt alignment zone wherein the butt ends of the logs are aligned against a common surface and then to a sorting zone wherein the logs are sorted according to length by gravity drop through progressively increasing openings in the conveyor support table.

3,776,379
LUMBER SORTER

Edward M. Harvey, 268 Ledgerwood Dr., Hot Springs, Ark.

Filed Sept. 15, 1972, Ser. No. 289,676
Int. Cl. B07c
U.S. Cl. 209—73 10 Claims

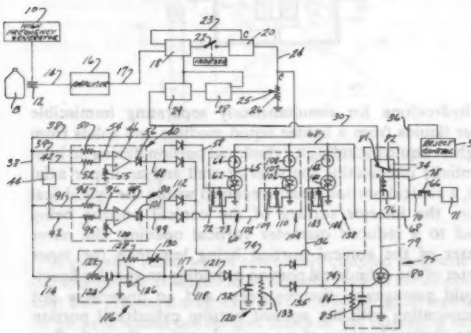


A lumber sorter including forward and rearward nylon straps suspended transversely across each of the bays to establish cooperating forward and rearward cradles for catching and supporting the lumber pieces as they are caused to fall from the disengagement mechanism of the sorter. The straps are trained about rotatable spool structure which preferably is driven by an electric motor for selectively varying the height of the cradles, i. e., each of the lumber pieces is received relatively close to the disengagement mechanism of the lumber sorter whether it be the first piece to fall on the cradles or the last. Subsequent to a bay receiving a package of lumber pieces, the straps are slackened by operating the motor, thus lowering the package until it restingly engages support structure which facilitates freeing the cradles by slipping them beyond the respective ends of the package. The support structure may be the usual buggy which heretofore received the lumber as it fell from the sorter. More preferably, the support structure is an infeed conveyor which conveys the package of lumber directly to a remote location, e. g., a stacker.

3,776,380
APPARATUS AND METHOD FOR MONITORING THE STATUS OF A RADIO FREQUENCY THICKNESS GAUGE

David A. Damm, Toledo, and Robert G. McKim, Maumee, both of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Jan. 24, 1973, Ser. No. 326,245
Int. Cl. B07c 5/34
U.S. Cl. 209—111.5 36 Claims

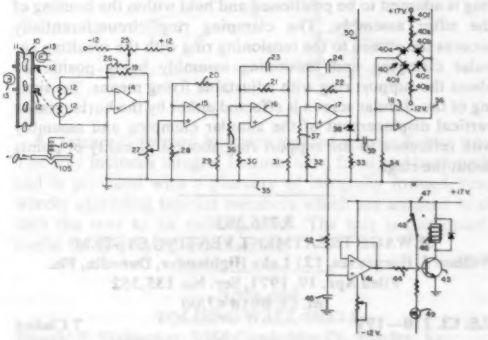


Apparatus and method for monitoring the status of a radio frequency glass thickness gauge. One type of thickness measuring device for glass containers uses the attenuation radio frequency signal as a measure of thickness. In order to compensate for ambient conditions, a compensated reference voltage, which represents the radio frequency signal with no glass present, is generated between gauging cycles. The present invention ensures that the compensated reference voltage is within its operational limits. If the compensated reference voltage is above a pre-selected maximum value or below a pre-selected minimum value, a signal is generated to turn on a warning light to indicate the deviation. In addition, the same signal may be used to interrupt the rejection of glass containers, since compensated reference voltages outside the tolerance limit will usually cause false rejection of good containers. The rate at which the compensated reference voltage is changed is likewise determined, and a signal is generated when the rate of change exceeds a pre-selected value. This signal turns on a warning light which indicates system oscillation type failure. The same oscillation warning signal may also be used to interrupt the rejection of glass containers, again to prevent false rejection of good containers.

3,776,381
APPARATUS FOR SORTING PRODUCTS

Richard A. Wood, 150 Cumulus, Sunnyvale, Calif.

Filed Apr. 25, 1972, Ser. No. 247,844
Int. Cl. B07c 5/342
U.S. Cl. 209—111.6 7 Claims



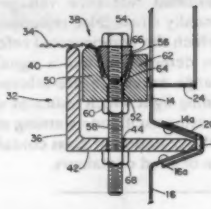
A machine for sorting products employing light sensitive cells for receiving light reflected from a product passing through a viewing zone to detect products that are too light, too dark or defective. The signals from the light sensitive cells are amplified and passed through active filters which eliminate high frequency signals, transients, etc., therefrom. Output from the active filters is supplied to comparators and also to a peak detector as well as to a product flow indicator which controls a signal, such as a light, to indicate if the flow of products through the viewing zone is interrupted for any reason. A resistor to ground supplies bias to a transistor which supplies a positive biasing voltage to the two comparators to keep these comparators turned off except when a positive peak pulse is supplied to the transistor from the peak detector. This gates the comparators on and if the signal from the product corresponds to a product that is either too light or too dark one of the other of the comparators transmits a positive pulse to a pulse stretching circuit which supplies a short pulse to a delay circuit comprising a 64 bit shift register which functions as a memory and predetermined delay and is controlled by pulses supplied by a clock pulse generator. A selected output of the shift register supplies a delay pulse to a transistor which is connected to the pulse stretcher and supplies a pulse of predetermined duration to the input of a transistor amplifier. This transistor amplifier controls the energization of the solenoid of the valve controlling the product rejector which is used to deflect the product to be rejected from the main product stream.

3,776,382

ADJUSTABLE TENSIONING DEVICE FOR CIRCULAR SCREENS

Edward S. Wright, Pittsburgh, Pa.; John W. Angstadt, and Otto C. Krolopp, both of Williamsville, N.Y., assignors to Blaw-Knox Food and Chemical Equipment, Inc., Buffalo, N.Y.

Filed Apr. 30, 1973, Ser. No. 355,916
Int. Cl. B07b 1/06
U.S. Cl. 209—403 15 Claims



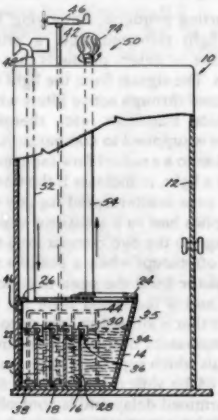
There is disclosed a novel circular screen frame assembly comprised of a screen, a support ring and an annular clamping and tensioning assembly. In one embodiment of the present invention, the annular clamping and tensioning assembly is comprised of a clamping ring and a tensioning ring. The support ring is adapted to be positioned and held within the housing of the sifter assembly. The clamping ring circumferentially secures the screen to the tensioning ring with the resulting annular clamping and tensioning assembly being positioned about the support ring with adjustable fixing means. Tensioning of the circular screen is effected either by the horizontal or vertical displacement of the annular clamping and assembly with reference to the support ring about a plurality of points about the rings.

3,776,383

SEWAGE TREATMENT VENTING SYSTEM

William J. Hargraves, 121 Lake Highlander, Dunedin, Fla.

Filed Apr. 19, 1971, Ser. No. 135,352
Int. Cl. B01d 43/00
U.S. Cl. 210—199 7 Claims



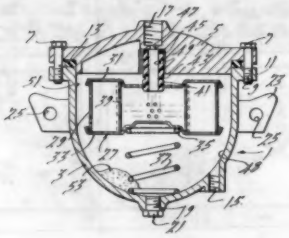
A portable toilet facility includes a plurality of series-connected aerobic digestion tanks within a walled enclosure. Venting of the air spaces of the tanks is accomplished with a vane-type air scoop which faces into the wind and conducts air to one of the air spaces, an exhaust vent conduit extending from one of the other air spaces to the exterior of the enclosure.

3,776,384

REPLACEABLE ELEMENT COOLANT FILTER

Robert J. Offer, Racine, Wis., assignor to Tenneco Inc., Racine, Wis.

Filed July 12, 1972, Ser. No. 271,063
Int. Cl. B01d 27/00
U.S. Cl. 210—209 7 Claims



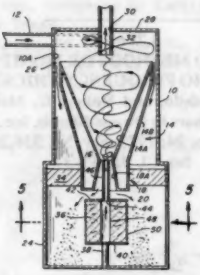
A pleated paper filter element is adapted for use in an existing water filter housing for internal combustion engine cooling systems by means of a grommet that serves to seat the element and seal it around the housing outlet.

3,776,385

HYDROCLONE FOR SIMULTANEOUSLY SEPARATING IMMISCIBLE HEAVIER LIQUIDS AND SOLIDS FROM A LIQUID MEDIUM

Andrew Maciula; William G. Tiederman, both of Stillwater, and Robert E. Reed, Bethany, all of Okla., assignors to Oklahoma State University, Stillwater, Okla.

Filed Dec. 13, 1971, Ser. No. 207,122
Int. Cl. B04c 5/04
U.S. Cl. 210—304 6 Claims



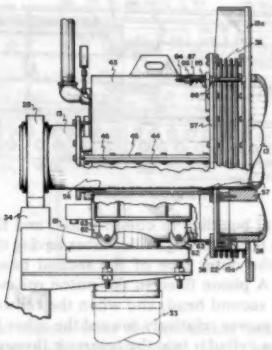
A hydroclone for simultaneously separating immiscible heavier liquids from a lighter liquid medium and solids from the lighter liquid including a cylindrical portion having an inlet tangentially intersecting the interior wall and an upper axial outlet, a conical portion axially received within the cylindrical portion, the interior surface of the conical portion being tapered to a reduced diameter vortical opening, the outer diameter of the conical portion being less than the inner diameter of the cylindrical portion providing an annular heavier liquid passageway therebetween, and an underflow pot communicating with the opened bottom cylindrical portion and the vortical opening of the conical portion, the underflow pot receiving expelled heavier liquids and some of larger solid particles through the annular passageway and expelled solids through the vortical opening.

3,776,386

APPARATUS FOR ROTARY FILTERS

Paul O. Richter, Salt Lake City; Robert M. Janchus, Bountiful, and Shih C. Shen, Salt Lake City, all of Utah, assignors to Envirotech Corporation, Salt Lake City, Utah

Filed Aug. 16, 1971, Ser. No. 171,890
Int. Cl. B01d *33/00*
U.S. Cl. 210—398 **6 Claims**



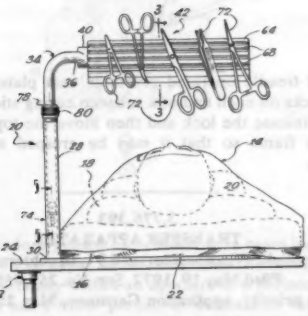
At the valve end of a rotary drum filter adapted for high submergence operation, an elongated trunnion extends to a trunnion bearing spaced outwardly of the tank wall; a longitudinally-splitable valve, non-integral with the bearing, is mounted outside the filter tank concentrically about and axially slidable on the trunnion between the bearing and tank. A short conduit conducts filtrate from the drum to the valve for discharge, and a flexible coupling surrounds the junction between the conduit and the valve and connects the valve to the filter tank.

3,776,387

PORTABLE STAND WITH MAGNETIC BAR SURGICAL INSTRUMENT HOLDER FOR USE ON AN OPERATING CART OR TABLE

Burton David Brent, 1110 Cleveland St., Evanston, Ill.

Filed Feb. 28, 1972, Ser. No. 229,732
Int. Cl. A47f *7/00*; F16m *11/00*
U.S. Cl. 211—60 T **6 Claims**



A portable stand with a removably coupled magnetic surgical tool holder arranged to overlie the patient on an operating cart and present a magnetic purchase for surgical instruments to be held within convenient reach of the operating surgeon. The stand has a flat base plate or platform capable of being engaged beneath the mattress supporting the patient on the operating cart. The holder includes an autoclave sterilizable bar member having a magnetic purchase surface for the surgical instruments canted at about 45° relative to the plane of the mattress so that the tools held thereon are oriented most conveniently relative to the operating surgeon. The distance of the bar member relative to the platform is variable by suitable adjustment means. Means may be provided for varying the angle of the bar member relative to the plane of the table or cart.

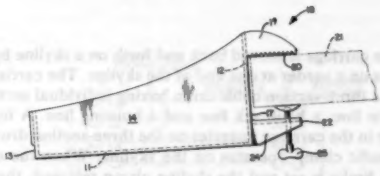
A modified embodiment of the stand is provided having suitable means for clamping the stand to a veterinary surgical table for veterinary surgery. In this embodiment, means are provided for adjusting the angle of cant of the bar member relative to the table, the head of which usually is lowered about 30° to prevent aspiration in the event the animal being operated should have an emesis.

3,776,388

DISPLAY TRAY

Harley H. Mattheis, Verona, N.J., assignor to Ethyl Development Corporation, Kansas City, Kans.

Filed Dec. 13, 1971, Ser. No. 207,160
Int. Cl. A47b *57/00*; A47f *3/14*, *5/00*
U.S. Cl. 211—86 **1 Claim**



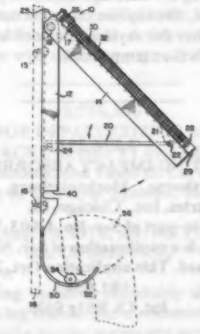
An integrally formed, injection molded, plastic display tray. The tray includes integral bottom, side, front and back walls and is provided with a plurality of integrally formed, rearwardly extending bracket members which are adapted to attach the tray to an existing shelf. The tray is particularly useful for displaying merchandise.

3,776,389

FOLDING WALL SHELF

Donald E. Waldecker, 3250 Cambridge Ct., Fairfax, Va.

Filed Mar. 17, 1972, Ser. No. 235,755
Int. Cl. A47b *97/04*; A47f *5/08*
U.S. Cl. 211—90 **9 Claims**

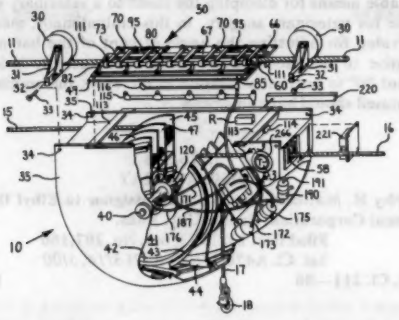


A folding wall shelf having bracket means for mounting on a wall and pivotally carrying means adapted to swing outwardly therefrom for defining an inclined writing support, the shelf further including pencil holding means and means for temporarily cradling a telephone handset at a location away from the regular telephone cradle.

3,776,390
SKYLINE LOGGING CARRIAGE

Norman E. Junes, Rt. 3, Box 148, Astoria, Oreg., and William R. Stanyer, 1715 S. Franklin, Seaside, Oreg.

Filed June 17, 1971, Ser. No. 153,984
Int. Cl. B66c *21/00*
U.S. Cl. 212—122 11 Claims



The carriage is moved back and forth on a skyline by winch drums on a yarder at one end of the skyline. The carriage contains a three-section cable drum having individual sections for a main line, a haulback line and a hoisting line. A hydraulic brake in the carriage operates on the three-section drum and a hydraulic clamp operates on the skyline. When the carriage drum brake is set and the skyline clamp released, the yarder winch drums pull the carriage out by winding in the haulback line and slacking off the main line. The yarder winch drums pull the carriage in by winding in the main line and slacking off the haulback line. When a turn of logs is to be lifted by the carriage for travel back to the yarder, the skyline clamp is set and the carriage drum brake released. The logs are lifted by causing the yarder main line winch to pull in the main line while the haulback line is slacked at the yarder.

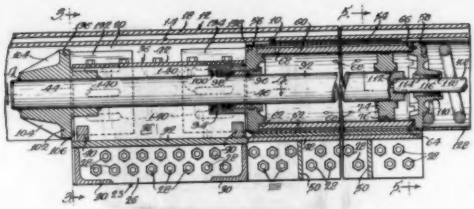
The skyline clamp and drum brake in the carriage are actuated by a special leak-proof hydraulic system. A hydrostatic transformer provides a high pressure source of hydraulic fluid for the clamp. The hydraulic system is supplied by a bi-rotational pump operated by rotation of the carriage cable drum and pressurized oil is stored in an accumulator when the pump is not operating. Valves for actuating and releasing the brake and clamp are radio controlled by an operator at the yarder. To facilitate putting the carriage on the skyline and removing it from the skyline, the skyline clamp is made accessible by a hinged frame so that the skyline does not have to be threaded lengthwise through the clamp shoes.

3,776,391
SINGLE ACTING IMPACT ABSORBING DEVICE

Vaughn T. Hawthorne, Mechanicsburg, Pa., assignor to Keystone Industries, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 1,903, Dec. 17, 1969, abandoned, which is a continuation of Ser. No. 710,196, March 4, 1968, abandoned. This application Oct. 22, 1971, Ser. No. 191,634
Int. Cl. B61g *9/08*
U.S. Cl. 213—8 28 Claims

The single acting impact absorbing device is interposed between the underframe center sill and the sliding sill of a railway car and has a single acting cylinder housed in a square hydraulic fluid reservoir, a first head of which normally abuts stop faces on a key housing fixed to the underframe center sill and a first set of stop faces fixed to the inner walls of the sliding sill. A piston rod slidably projects through the first head and the housing and carries a movement limiting member on its outer end which normally abuts stop faces on the opposite end of the housing and a second set of stop faces on the sliding sill. A spring rod secured to the piston rod retains a spring acting between the second head and a follower at the outer end of the spring rod, the spring stressing both rods in tension. A tube adjacent the second head houses the spring and restrains it

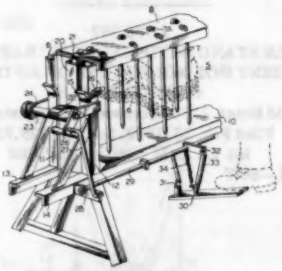


against lateral buckling in compression, and filling access to the reservoir is had through filler tubes having their lower ends opening to the outer face of the second head adjacent the spring tube. A piston fixed to the piston rod normally is held adjacent the second head, and when the railway car receives an impact it moves relatively toward the other head, expelling fluid from the cylinder into the reservoir through a decreasing number of flow restricting orifices.

3,776,392
APPARATUS FOR OPENING TOBACCO CURING STICKS

Delmas D. Williams, Rt. 1, Robersonville, N.C.

Filed June 30, 1972, Ser. No. 267,928
Int. Cl. B65b *13/18*
U.S. Cl. 214—1 R 6 Claims



A foot treadle operated pivotable cam plate engages the spring locks on each end of a tobacco curing stick simultaneously to release the lock and then move the top member up from the frame so that it may be grasped and manually removed.

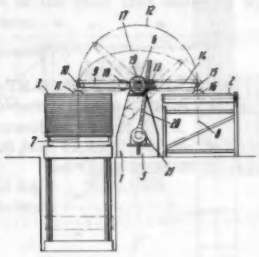
3,776,393
TRANSFER APPARATUS

Gerd Bargstedt, Wischhafenersand 91, Drochtersen, Germany

Filed May 19, 1972, Ser. No. 255,059
Claims priority, application Germany, May 25, 1971, P 21 25 846.8
Int. Cl. B65g *59/04*
U.S. Cl. 214—1 BV 9 Claims

The apparatus serves to transfer items between two stations. A frame is disposed between said two stations and at its top carries a first pivot. A first rocker lever assembly is pivoted on the first pivot and has a longer portion on one side of the first pivot. A second pivot is carried by the first rocker lever assembly and parallel to and spaced from the first pivot. A

second rocker lever assembly is mounted on the second pivot and rotatable in unison with the first rocker lever assembly during a movement of the latter. Connecting drive means connect the first and second rocker lever assemblies and are arranged to impart to the second rocker lever assembly a movement in dependence on the movement of the first rocker lever assembly. Holding means for holding items are carried by the first and second rocker lever assemblies at those ends thereof



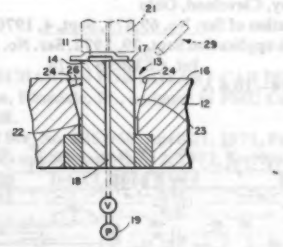
which are most remote from the associated first and second pivots. The first and second rocker lever assemblies are pivotally movable over head and have different lengths between the associated first and second pivots and the ends provided with the holding means. Said lengths are selected so that the holding means are equally spaced from the first pivot means when the first and second rocker lever assemblies are angularly spaced 180° apart.

3,776,394

METHODS AND APPARATUS FOR IMPARTING A DESIRED ORIENTATION TO AN ARTICLE

Dennis Brian Miller, Ewing Twsp., Mercer County, N.J., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed Aug. 23, 1972, Ser. No. 283,038
Int. Cl. B65g *47/24*
U.S. Cl. 214—1 R **18 Claims**



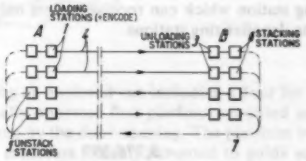
A small, randomly oriented article, e.g., a beam lead device, is supported on an upper surface of a ram. The ram is relatively movable vertically within an aperture in a horizontal plate. The aperture has a lower portion of dimensions very slightly larger than those of an article, and is shaped such that the article will necessarily assume a desired orientation within the lower portion of the aperture. The aperture has an upper portion with walls tapered downwardly and inwardly in order to guide the article into an aligned position in the lower portion of the aperture as the article moves downwardly within the aperture. A fluid is introduced into the vicinity of the upper surface of the ram at approximately the same time as the ram begins a relative downward movement within the aperture. The fluid causes the article to float and/or interferes with any tendency of the article to adhere to the tapered walls of the aperture due to friction, static electricity and/or the presence of any adhesive material on the article. The fluid also tends to form a meniscus sloping downwardly away from the tapered walls toward the desired orientation of the article, thereby further urging the article into the desired orientation. Once the article is aligned correctly on the upper surface of the ram, a partial vacuum may be introduced beneath the article so as to withdraw the fluid and to retain the article on the ram, after which the ram may be raised for removal of the article.

3,776,395

CONVEYOR SYSTEM WITH PALLETS, PREFERABLY FOR AIRPORT BAGGAGE HANDLING

Gerhard Lingg, Leimen, and Eberhard Hellermann, Morfelden, both of Germany, assignors to Mannesmann Aktiengesellschaft, Dusseldorf, Germany

Filed Feb. 10, 1972, Ser. No. 225,245
Claims priority, application Germany, Feb. 17, 1971, P 21 07 489.5
Int. Cl. B65g *60/00*
U.S. Cl. 214—6 BA **5 Claims**



Conveyor system with plural branches and return path portions for operation in an overall closed loop configuration, there being pallets on the conveyor system circulating in the closed loop and receiving individual items of load to be transported, the conveyor system having individual loading stations for pallets and unloading stations for loaded pallets, from which the empty pallets return to the loading stations. The closed loop including a portion of the conveyor system that is common for return of pallets for several of the unloading stations to several of the loading stations. A pallet stacking station is disposed behind unloading stations for feeding stacks of empty pallets into that common portion, and a pallet unstacking station is disposed in front of the loading stations, receiving stacks of empty pallets and unstacking them for individual availability of emtpy pallets in the loading stations, so that only loaded pallets circulate in the system, loaded either with load proper or with other, empty pallets.

3,776,396

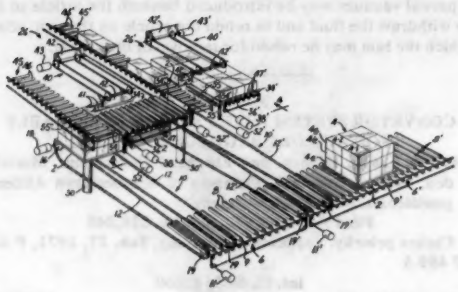
APPARATUS FOR DEPALLETIZING ARTICLES AND STACKING EMPTY PALLETS

Harold S. Burt, Mendota, and Vasco O. Carvalho, Skokie, both of Ill., assignors to Conveyor Systems, Inc., Morton Grove, Ill.

Filed Aug. 13, 1971, Ser. No. 171,554
Int. Cl. B65g *59/02*
U.S. Cl. 214—8.5 A **6 Claims**

Two depalletizing stations, preferably sharing a common empty pallet stacking station and a common inlet conveyor to be rendered operable by the automatic sequential feeding of loaded pallets to the inlets thereof from the common inlet conveyor. Alternatively, one of the depalletizing stations can be shut down when desired. When the depalletizing stations are both operated, article position and/or apparatus condition sensing means and associated control means responsive thereto control the movement of palletized articles from the common inlet conveyor to the conveyors extending from the

common inlet conveyor to the depalletizing stations so palletized articles are automatically fed to a depalletizing station free to receive a new loaded pallet. The depalletizing stations most advantageously discharge articles upon respective article-receiving conveyors each of which is capable of discharg-



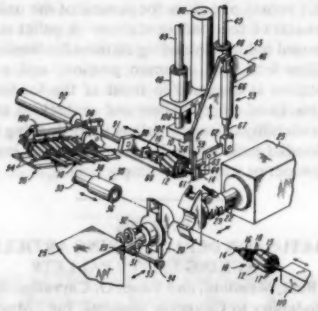
ing articles at either one of the same two discharge points when operating separately. Empty pallets from the depalletizing stations are fed to different sides of a common pallet stacking station which can receive pallets only one at a time from the depalletizing stations.

3,776,397

ARMATURE WINDING APPARATUS WITH IMPROVED ARMATURE LOADING MECHANISM

Robert P. Hoy, Springfield, and Robert C. Gray, Dayton, both of Ohio, assignors to Mechaneer, Inc., Dayton, Ohio

Filed Feb. 28, 1972, Ser. No. 229,667
Int. Cl. B65g 61/00
U.S. Cl. 214—8.5 K 10 Claims



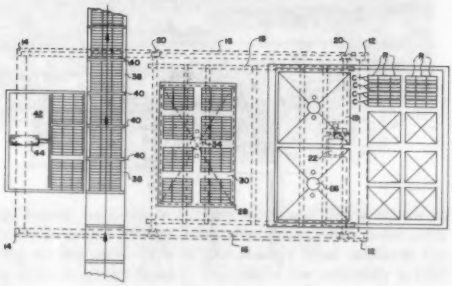
A series of armatures each including an armature core and a commutator mounted on a shaft, are automatically and successively loaded into an armature winding machine between a pair of opposingly retractable wire forming chucks by a vertically disposed carriage supported for linear movement between an upper receiving position and a lower delivery position. The carriage incorporates means for releasably gripping an end portion of the shaft and cooperates with a linearly movable transfer shelf to transfer each armature from a supply ramp downwardly between the chucks after they have moved to their retracted open positions. Adjustable stops provide for accommodating armatures of different sizes.

3,776,398

BRICK REGROUPING APPARATUS

Gerald L. Stuart, and Forrest A. Paschal, both of Siler City, N.C., assignors to Forrest Paschal Machinery Corporation, Siler City, N.C.

Filed July 28, 1972, Ser. No. 276,031
Int. Cl. B65g 59/02
U.S. Cl. 214—8.5 C 7 Claims



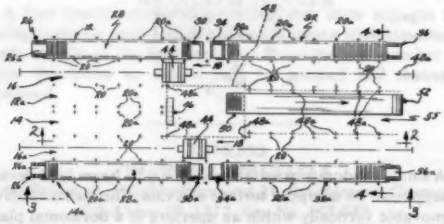
Bricks arranged in a plurality of stacks on kiln cars in double-layer courses having a prescribed number of bricks in each row and column are first transferred to an intermediate table by means of a first, side gripper pickup head. The side gripper pickup head includes several pair of gripper members which grip the bricks at the ends of the rows thereof and compact the rows in preparation for the first head to lift and transfer the bricks to the intermediate table. A second, end gripper pickup head includes several pairs of gripper segments, movable with respect to each other, to grip the bricks at the ends of the columns, lift and adjust the row-wise spacing therein to arrange the bricks into courses having a different number of bricks in the rows thereof than the courses on the kiln cars. The second pickup head then transfers the bricks held therein to an off-bearing conveyor leading to a stacking and strapping station.

3,776,399

AUTOMATIC WAREHOUSING SYSTEM

Wayne G. Atwater, Willoughby, Ohio, assignor to The Triax Company, Cleveland, Ohio

Continuation of Ser. No. 69,871, Sept. 4, 1970, abandoned.
This application Sept. 29, 1972, Ser. No. 293,643
Int. Cl. G05b 19/14
U.S. Cl. 214—16.4 A 14 Claims



An automatic warehousing system including a storage frame area of horizontally and vertically oriented storage volumes with a mechanized load carrier movable alongside the storage volumes for handling loads at selected storage volumes. The load carrier is adapted to be controlled from an operator's control area located within the confines of the storage frame area. Inbound and outbound conveyor mechanisms disposed beneath the storage volumes operate to move stock to and from respective inbound pickup and outbound discharge sta-

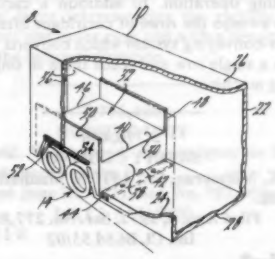
tions, which are also located within the storage frame area beneath the storage volumes. An order picking work station is also located within the storage frame area adjacent to or readily accessible to the control area, for the placing thereon of order picked stock from the load carrier, with an output conveyor coacting with the order picking station for accumulating order picked stock orders thereon and moving such order picked stock out of the storage frame area. The purpose of the system is to provide for more expeditious operation of an automatic warehousing system and for more effective and efficient utilization of the floor area occupied by the storage frame of the system.

3,776,400

TRAILER CONSTRUCTION

Robert B. Schwartz, Harper Woods, Mich., assignor to Fruehauf Corporation, Detroit, Mich.

Filed June 12, 1972, Ser. No. 262,037
Int. Cl. B62d *33/08*
U.S. Cl. 214—38 BA **18 Claims**



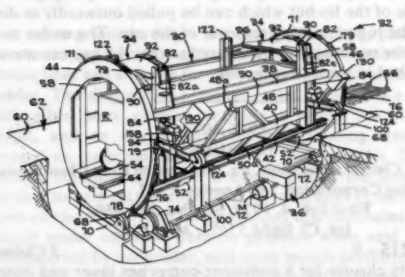
A trailer construction comprising a rear floor overlying and attached to the rear wheel bogie and a front floor, at least a portion of which is disposed for over-the-road hauling at a level vertically below the level of the rear floor to provide cargo space below the rear floor and forward of the bogie. The two floors are mounted on the trailer such that when the trailer is to be loaded or unloaded, the front floor portion may be elevated relative to the rear floor to cause the two floors to be brought into alignment and thereby provide a continuous interior floor surface over which fork lift trucks or other cargo handling equipment can be operated to load and unload cargo.

3,776,401

CLAMP MECHANISM FOR ROTARY CAR DUMPER

Ralph C. Ouska, Hinsdale, Ill., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 135,960, April 21, 1971, Pat. No. 3,719,292. This application May 12, 1972, Ser. No. 252,635
Int. Cl. B65g *67/54*
U.S. Cl. 214—55 **6 Claims**



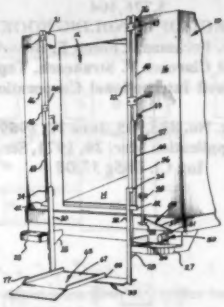
A railroad car is secured for dumping in a rotary car dumping cradle by gravity lowered clamp beams which engage the top of the car and are locked in place by a gravity actuated, infinitely variable locking mechanism that grasps tension members connected to the side of the car dumper.

3,776,402

LIFTING PLATFORM

Carl E. Bryan, Grand Rapids, Mich., assignor to Grocers Baking Company, Grand Rapids, Mich.

Filed Aug. 2, 1971, Ser. No. 167,972
Int. Cl. B60p *1/44*
U.S. Cl. 214—75 T **12 Claims**



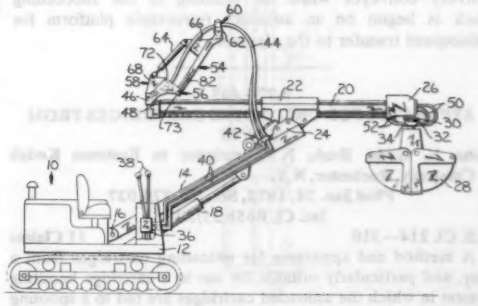
A truck, having an enclosed van including a door for access, has a hydraulically operated first platform mounted adjacent the side of the van by the door opening. The platform includes a pair of guide members slidably mounted to guide supports on either side of the door. A pair of hydraulic cylinders mounted on either side of the door opening have lifting rods actuated by the hydraulic cylinders and coupled to the platform such that the platform can be raised or lowered from the ground level to the floor level of the van. The first platform includes a hinged second platform which in a loading position is generally horizontal for receiving and discharging goods and when in a retracted position is vertically oriented and locked into position by locking means. The system is relatively inexpensive and can be easily removed from one truck and mounted to another truck.

3,776,403

HOSE MINDER

Roy O. Billings, 6621 W. Wisconsin Ave., Milwaukee, Wis.

Filed June 7, 1972, Ser. No. 260,474
Int. Cl. B66f *9/00*
U.S. Cl. 214—137 **11 Claims**



An elongated controlling arm is hingedly connected at one end to the inner end of a dipper stick of an earth-moving crane

to serve as a controller for hydraulic or pneumatic hoses which extend between the dipper stick and a boom on which the dipper stick is slideably mounted. A roller is mounted on the free end of the arm for rollably engaging the hoses. The arm is spring biased away from the boom so as to keep the hoses under tension in all positions of the boom and dipper stick. In addition, the connection of the controller arm to the dipper stick includes a pair of springs which resiliently hold the arm in contact with a bracket mounted on the dipper stick and allow the arm to be rocked from side to side in the bracket without becoming damaged or without damaging outside objects such as glass windows or siding of buildings.

3,776,404

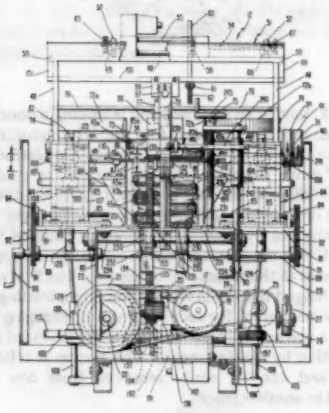
METHOD OF HANDLING BOOKS

Frank J. Anastasio, Paramus; Clinton F. Brundage, Mahwah, both of N.J., and Clarence P. Strakosch, Tappan, N.Y., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 833,985, June 17, 1969, Pat. No. 3,640,407. This application Mar. 26, 1971, Ser. No. 128,505

Int. Cl. B65g *57/08*

U.S. Cl. 214—152 **18 Claims**



Method and apparatus whereby books delivered on-edge, spine-up, as by a building-in machine, are alternately tipped in opposite directions on a continuously operating belt conveyor, funnelled into alignment and then stacked with the spine joints of adjacent books at opposite sides of the stack and offset to prevent crushing thereof. The progressively formed stacks are progressively lowered on a photocell-controlled elevator, jogged, and then removed to a delivery conveyor while the building of the succeeding stack is begun on an auxiliary retractable platform for subsequent transfer to the elevator.

3,776,405

APPARATUS FOR UNLOADING CARTRIDGES FROM TRAYS

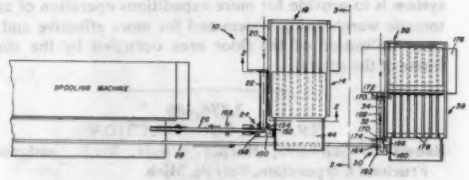
John N. Gade, Rush, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 24, 1972, Ser. No. 220,027

Int. Cl. B65b *35/20*

U.S. Cl. 214—310 **11 Claims**

A method and apparatus for unloading cartridges from a tray, and particularly suitable for use in a cartridge handling system in which the unloaded cartridges are fed to a spooling machine where they are loaded with film. The cartridge handling system comprises an in-feed section for unloading rows of empty cartridges from the tray and feeding the cartridges one at a time into the spooling machine, and an out-feed section for removing the loaded cartridges one at a time from the spooling machine, arranging the cartridges into rows, and loading the rows of cartridges into empty trays. The tray unloading apparatus comprises an elevator mechanism for lifting the empty cartridges from a tray to an elevated position clear



of the tray, and a retaining mechanism for retaining the cartridges in proper orientation on the elevator mechanism during the lifting operation. In addition a cartridge sweeping mechanism sweeps the rows of cartridges lifted from the tray to a transfer-conveying system which converts the rows of cartridges into a single row and feeds them in single file order to the spooling machine.

3,776,406

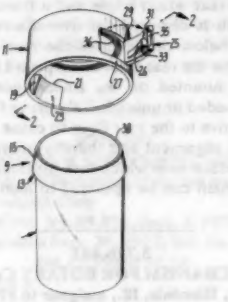
SAFETY CLOSURE

Benjamin K. Milbourne, Sr., 1519 S. Manhattan Pl., Los Angeles, Calif.

Filed Aug. 4, 1972, Ser. No. 277,854

Int. Cl. B65d *55/02*

U.S. Cl. 215—9 **1 Claim**



A safety closure for a container having an outwardly extending annular lip, said closure comprising a cap having an inwardly extending fixed lug which engages the underside of the lip and an opposite hinged lug which normally engages the underside of the lip but which can be pulled outwardly to disengage the lug permitting removal of the cap. The under surfaces of the two lugs may be tapered so that the cap can merely be pushed in place over the lip.

3,776,407

CLOSURE

David R. Clstone, Lancaster, Pa., assignor to Kerr Glass Manufacturing Corporation, Los Angeles, Calif.

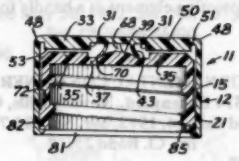
Filed Feb. 4, 1972, Ser. No. 223,450

Int. Cl. B65d *55/02*; **A61j** *1/00*

U.S. Cl. 215—9 **5 Claims**

A safety closure for a container comprises inner and outer caps with ratchet teeth formed on the skirts of the caps for abutting and turning the inner cap on the container when a torque is applied to the outer cap in the application direction.

When the outer cap is turned in the removal direction, the ratchet teeth slide by each other without turning the inner cap. With exertion of a downward axial force on the outer cap, a segmented ring forming a flexible dome on a central portion of one of the caps is flexed by a facing rigid central portion on the other cap thereby allowing radially extending teeth on the



inner surface of the top end wall of the outer cap to move axially toward and into engagement with radially extending teeth on the upper surface of the top end wall of the inner cap. Thus, removal of the closure can be accomplished only with a downward axial force interengaging the radially extending teeth on the inner and outer caps and with a simultaneous applied torque in the removal direction.

3,776,408

NURSING UNIT

Stephen A. Wald, Wallingford, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed June 28, 1971, Ser. No. 157,409
Int. Cl. A61j 9/00
U.S. Cl. 215—11 E **16 Claims**

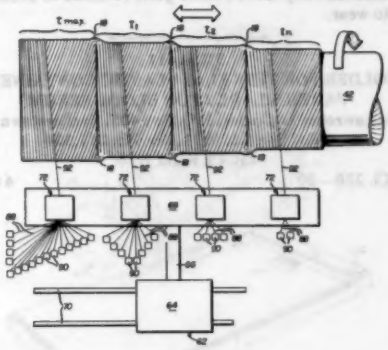
A nursing unit having a disposable, seamless, plastic liner for containing liquid; a self-supporting tubular holder for the plastic liner and a nipple for closing an open end of the tubular holder. The disposable, seamless, plastic liner has a flexible, collapsible body portion defining a cavity for containing liquid, and an upper, firm flange extending transversely beyond an outer side surface of the body portion. The body portion collapses as liquid is drawn out of the liner during nursing to prevent the formation of a vacuum in unfilled portions of the cavity. The flange defines and maintains an open mouth under ambient, uniform pressure when said flange is unsupported by the holder, said open mouth permitting egress and ingress of liquid. The flange is clamped between an upper margin of the tubular holder and a downwardly extending shoulder on the nipple.

3,776,409

GLASS FIBER CONTAINER AND METHOD OF CONSTRUCTION

Lee E. Pearson, Granville, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 862,727, Oct. 1, 1969, Pat. No. 3,673,028.
This application Jan. 31, 1972, Ser. No. 221,977
Int. Cl. F25j
U.S. Cl. 220—3 **7 Claims**



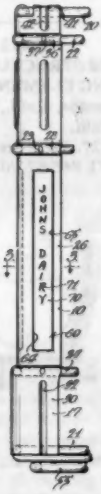
A filament wound glass fiber container includes a base and a hollow tubular wall having a unitary resin matrix reinforced with peripherally wound groups of glass fibers. The tubular wall is apportioned in axially aligned sections which incrementally increase in thickness from one end of the container to the other. Each of the wall sections is wound from a different group of glass fibers with the number of fibers in the respective group being progressively larger in proportion to the thickness of the corresponding sections. The windings of each section overlap in the end regions with the windings of adjacent sections to provide continuity of reinforcement through the region where adjacent sections meet.

3,776,410

PRODUCT-CARRYING BASKET

Arthur B. Carlson, Mendota, Ill., assignor to Conco Inc., Mendota, Ill.

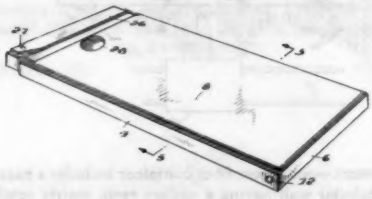
Filed Mar. 5, 1971, Ser. No. 121,270
Int. Cl. B65d 7/20; G09f 3/18
U.S. Cl. 220—19 **1 Claim**



A product-carrying basket having a construction primarily of sheet metal corner members with angularly-related planar

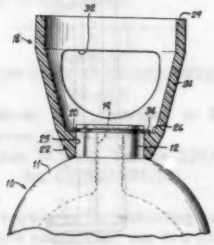
sections assembled to a plurality of perimeter frame wires, with the sheet metal corner members extending for the full height of the basket to provide added strength and constructed to form an integral part of the basket, with welding of a plurality of the perimeter frame wires to a corner member being accomplished as an initial stage in assembly. The product-carrying basket has structure associated with at least one of the corner members to permanently associate a name with the basket, with the name being added after manufacture by a mechanically-locked name-plate recessed to avoid exposure to wear.

3,776,411
HOLDER FOR THIN FLAT PLASTIC CONTAINERS, PARTICULARLY FOR BLOOD SERUM
James Lawrence Luckadoo, P.O. Box 405, Buckeystown, Md.
Filed Dec. 23, 1971, Ser. No. 211,324
Int. Cl. B65d 7/24
U.S. Cl. 220—20 **4 Claims**



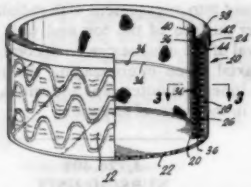
A thin flat container formed of a heat conductive material, such as aluminum consists of a shallow tray having a closure hinged along one edge and movable between open and closed positions. At the end of the tray opposite the hinge there is an outwardly opening channel for receiving test samples of the serum or the like which is enclosed in a plastic bag and is fitted in the tray. A closure member for the channel is hinged to the tray at one end of the channel, and has on one side a downward extension sufficient to engage over the upper free edge of the door. The arrangement is intended for holding serum such as blood cells, plasma or the like during freezing at very low temperatures and storing it in a refrigerated space. The closing and locking member has a hole at the end remote from the hinge, for engagement by a tool for opening it, and also a hole at the hinge end above the hinge pivot through which a hook may be inserted to engage the pivot and lift the whole device.

3,776,412
GAS CYLINDER STRUCTURE AND VALVE-PROTECTING ELEMENT THEREFOR
Wilbur H. Mink, Riverside, Calif., assignor to Luxfer USA Limited, Riverside, Calif.
Filed Sept. 27, 1972, Ser. No. 292,648
Int. Cl. B65d 25/00; F25j
U.S. Cl. 220—85 P **4 Claims**



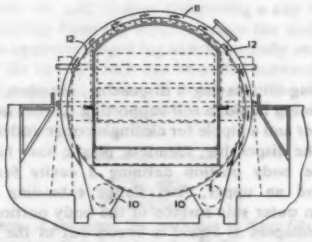
A compressed-gas cylinder having an integral neck for attachment of a valve or the like, with a rigid, hollow, open-ended valve-protecting element rotatably mounted on the neck. The protecting element includes a sleeve surrounding the neck and held in place by a retaining ring snap-fitted into an annular recess on the neck outwardly of the sleeve. An enlarged, generally outwardly flaring portion of the protecting element is formed integrally with and projects outwardly from the sleeve for laterally enclosing and protecting a valve mounted on the neck. Openings are provided in the wall of this enlarged portion to afford access to the valve and to enable use of the protecting element as a handle for the cylinder.

3,776,413
ORNAMENTAL CONTAINER
Jack N. Myers, 514 Doheny Rd., Beverly Hills, Calif.
Filed Feb. 14, 1972, Ser. No. 225,766
Int. Cl. B65d 25/18
U.S. Cl. 220—9 R **8 Claims**



A container comprising a transparent cup-shaped member forming a base and an outer upright tubular sidewall, and an inner tubular sidewall telescoped within the outer sidewall, the sidewalls being spaced apart to define an annular space for encasing a decorative fabric which forms ornamentation for the container. A split ring forms a mounting sleeve for supporting the fabric in the annular space, and a flange overlies the upper ends of the sidewalls to close the annular space. In one embodiment, the flange is secured to the inner sidewall, and in another embodiment, the flange is part of a removable cap.

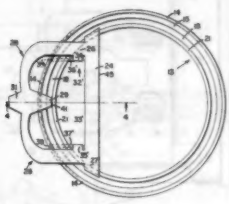
3,776,414
TANKS FOR THE CONTINUOUS TREATMENT OF ELONGATED METAL WORKPIECES
Frank George Morley Baker, Wednesbury, Staffordshire, England, assignor to Prodorite Limited, Wednesbury, Staffs., England
Filed Sept. 11, 1972, Ser. No. 287,804
Claims priority, application Great Britain, Sept. 11, 1971, 42,440/71
Int. Cl. B65d 7/42
U.S. Cl. 220—71 **4 Claims**



A tank for the continuous treatment of elongated metal strips and workpieces by transient immersion in acid solutions comprises an elongated tubular construction having circumferentially extending tubular stiffening parts at spaced posi-

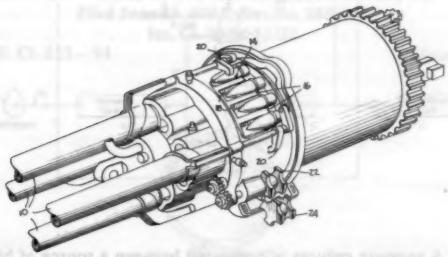
tions along its length, the wall of the tubular construction being formed with ports opening into the interior of said stiffening parts and said interiors of all of said stiffening parts being connected to a manifold for fume extraction purposes.

3,776,415
PAINT BRUSH WIPER
William J. Pfeffer, 1015 Madison St., Manitowoc, Wis.
Filed May 30, 1972, Ser. No. 257,641
Int. Cl. B65d 25/00
U.S. Cl. 220—90 4 Claims



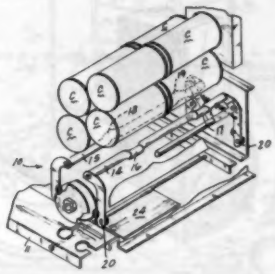
A novel paint brush wiper made from sheet metal, having an initial flat form adapted to be subsequently readily bent and deformed into an operative three dimensional shape, suitable for removable attachment over the open top of a paint can or the like and held interlockably on said can against accidental displacement forces tending to unwantedly displace said wiper sidewise, for-and-aft, upwardly and downwardly.

3,776,416
ARTICLE HANDLING SYSTEM
Eugene Ashley, Burlington; Francis L. Jarvis, Troy; Burton P. Clark, St. George; George E. Kontis, Essex Junction, and Paul A. Spoor, Jericho, all of Vt., assignors to General Electric Company
Division of Ser. No. 201,357, Nov. 23, 1971. This application Jan. 3, 1973, Ser. No. 320,839
Int. Cl. B65h 3/00
U.S. Cl. 221—21 8 Claims



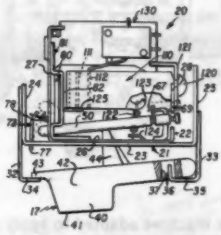
A battery gun has a stationary housing; a plurality of barrels disposed in an annular row and stationary with respect to said housing; each of said barrels having a respective chamber; feeding means for receiving a continuous and regular train of projectiles from a supply; intermediate means for receiving the train from said feeding means; and distributor means for receiving the train from said intermediate means for providing projectiles to said chambers; said intermediate means including means for sensing the presence of misfired projectiles in said chambers and for providing lacunae in the train of projectiles corresponding to such misfires, whereby no projectiles are provided to said distributor means for provision to chambers containing misfired projectiles.

3,776,417
ARTICLE VENDING MECHANISM
Forrest L. Austin, Brooklyn Center, Minn., assignor to Selectivend, Inc., Des Moines, Iowa
Filed Jan. 26, 1972, Ser. No. 220,851
Int. Cl. G07f 11/08
U.S. Cl. 221—67 1 Claim



An article release mechanism for a vending machine includes horizontal bar means disposed beneath a staggered stack of articles to be vended, wall means laterally supporting the articles in the column, and one of said means, such as the horizontal bar means, having a radial projection which cooperates with the other means to provide a 3-point engagement with the article being released.

3,776,418
SELECTION SYSTEM FOR VENDING MACHINE
Floyd V. Bookout, Long Grove, Ill., assignor to Rock-Ola Manufacturing Corporation, Chicago, Ill.
Filed Sept. 11, 1972, Ser. No. 287,785
Int. Cl. G05g 5/08
U.S. Cl. 221—125 9 Claims



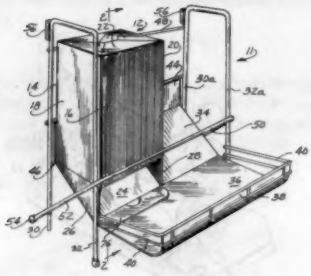
An electro-mechanical apparatus for use in automatic vending machines, particularly of the mixed drink variety, embodying multiple push button selection controls operatively integrated by pivotal commodity rods and bars with common electrical control switches and vending circuits including a mechanical memory complex demanding the dispensing of a selected commodity for each vending operation, and electromechanical means for positively integrating and interlocking credit acceptance and commodity selection functions as a precondition to initiating vending operation of the machine.

3,776,419

CONTAINER AND RACK FOR PRESENTING ARTICLES

Bernhard A. Zinkgraf, Prospect Heights, and Jack Leroy Williams, Palatine, both of Ill., assignors to Krafto Corporation, Glenview, Ill.

Filed Sept. 17, 1971, Ser. No. 181,614
Int. Cl. B65h 1/06
U.S. Cl. 221—197 1 Claim



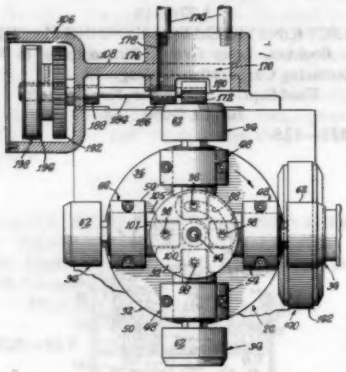
Apparatus for dispensing articles which includes a container and a rack to hold the container in an inverted position. The rack cooperates with the container to support the container in a predetermined manner so as to allow articles to move from the container through an opening in the container.

3,776,420

TURRET TYPE FEEDER FOR SPRAY MACHINE

Julius J. Melind, Des Plaines, Ill., assignor to H. L. Fisher Mfg. Co. Inc., Chicago, Ill.

Filed Apr. 3, 1972, Ser. No. 240,601
Int. Cl. B23q 7/04
U.S. Cl. 221—211 13 Claims



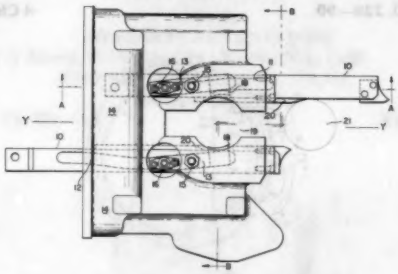
In a turret type machine adapted to apply a coating to one surface of a can lid, the can lids are stacked in a load chute and sequentially advanced downwardly by a feed means that drops the lowermost can lid to a loading position. A turret subassembly rotates a plurality of radially extending work holder units in timed relation to the feed means such that a work holder unit passes through the loading position simultaneously with the arrival of the lid. Each work holder unit has a work piece holder at its outer end which catches the falling can lid and a suction means to hold the can lids in place as the work holder unit moves into a spraying area. After a conventional spraying device applies a coating to the can lid, the suction means releases its hold on the treated can lid and the can lid drops to an output chute.

3,776,421

MECHANISM FOR SEPARATING A CONTAINER CLOSURE FROM A STACK OF CLOSURES

William B. Harrison, Dedham, and Edwin E. Keene, Roslindale, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Continuation of Ser. No. 1,209, Jan. 7, 1970. This application Feb. 16, 1972, Ser. No. 229,212
Int. Cl. B65g 59/00
U.S. Cl. 221—251 2 Claims



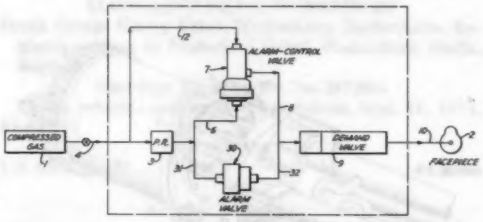
A closure feed mechanism for reciprocating slide-type container closure lining machines. It is provided with cut-off knives which separate the lowermost closure from the closure in the feed stack by causing the knives to advance transverse to the motion of the slide rather than advance longitudinally at the speed of the slide. As a result, knives approach the closures with one-half of their prior velocities, and denting or bending the closures is substantially eliminated.

3,776,422

COMPRESSED GAS BREATHING APPARATUS

Layton A. Wise, Washington, Pa., assignor to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Oct. 25, 1972, Ser. No. 301,461
Int. Cl. B67d 5/32
U.S. Cl. 222—3 10 Claims



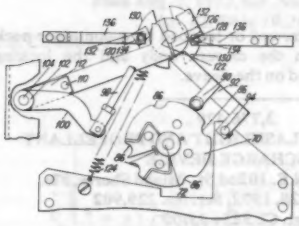
A pressure reducer is connected between a source of high pressure breathing gas and the inlet of a normally closed pneumatically operated control valve, the outlet of which is connected with a pressure reducing demand valve leading to a facepiece. A tube also connects the breathing gas source with another part of the control valve for holding the latter open as long as the breathing gas pressure remains above a predetermined value, whereby the control valve connects the pressure reducer with the demand valve. A normally closed pneumatically operated alarm valve also connects the pressure reducer with the demand valve, but is formed and constructed to be snapped open by the pressure drop across it only when the demand valve is opened while the control valve is closed due to reduction in the gas pressure below said predetermined value. The pulse of gas created every time the alarm valve opens signals the user that the control valve has closed.

3,776,423

LIQUID DISPENSING APPARATUS FOR BLENDS OF TWO OR MORE LIQUIDS

Hugh Edmund Phillips, London, England, assignor to Avery-Hardoll Limited, Chessington, Surrey and Beck & Co. (Meters) Limited, London, England

Continuation of Ser. No. 3,108, Jan. 15, 1970, abandoned.
This application Jan. 13, 1972, Ser. No. 217,677
Claims priority, application Great Britain, Jan. 20, 1969, 3,182/69
Int. Cl. B67d 5/30
U.S. Cl. 222—26 1 Claim



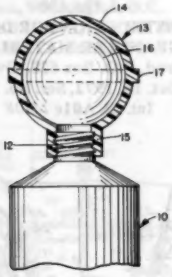
A dispensing apparatus for blends of two or more petrols is provided with an interlock linkage connected between the blend selection device and a stop member connected to the switch for activating the pump motor whereby on alteration of the blend selection device the linkage moves into the path of the stop member, de-activating the motor, and likewise the blend selection device is prevented from being operated when the motor switch is in the 'on' position.

3,776,424

NON-CLOGGING CLOSURE CAP

Nicholas J. D'Amato, 2840 Braidwood Rd., Richmond, Va.

Filed June 23, 1972, Ser. No. 265,682
Int. Cl. B65d 35/22
U.S. Cl. 222—94 2 Claims



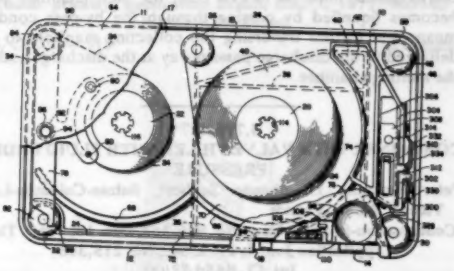
A hollow closure cap is removably positioned on the outlet neck of a collapsible container. The interior of the cap provides a space to receive contents of the container which ooze from the neck after the container is squeezed, thus preventing the ooze from gathering on the outside of the neck and interfering with placement and removal of the cap.

3,776,425

SYSTEM FOR RUPTURING POD CONTAINING PROCESSING FLUID FOR PHOTOGRAPHIC MATERIAL

Philip G. Baker, Peabody; Gerald H. Cook, Lynnfield, and Rogers B. Downey, Lexington, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 838,783, July 3, 1969, Pat. No. 3,687,051.
This application June 1, 1972, Ser. No. 258,843
Int. Cl. B65d 35/28
U.S. Cl. 222—101 17 Claims



A system for rupturing a pod having a weakened edge portion and containing processing fluid for photographic material and for expelling the fluid therefrom. The fluid filled pod is mounted adjacent a support surface and protected by a flexible cover plate. A rigid member is initially disposed between the cover plate and the support surface adjacent the end of the rupturable pod furtherest removed from the pod's weakened portion. Extending along the inside face of the cover plate is a rib which initially presses the section of the pod adjacent thereto against the support plate so that substantially no fluid is disposed within the pod between the rib and the support plate. The cover plate includes access means whereby externally mounted force applying means may be introduced into the space between the cover plate and the support surface to displace the rod across the length of the pod. The cover plate is deflected by the rod during its displacement across the pod and at the same time presses the rod firmly against the pod.

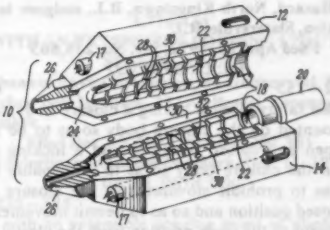
This system can advantageously be employed in a compact multi-purpose film handling cassette adapted to be inserted into a unique processor-projector unit containing the aforementioned force applying means.

3,776,426

ADHESIVE EXTRUDERS

Albert E. Newton, Beverly, Mass., assignor to USM Corporation, Flemington, N.J.

Filed Sept. 26, 1972, Ser. No. 292,420
Int. Cl. B67d 5/62
U.S. Cl. 222—146 HE 4 Claims



Apparatus for melting and dispensing heat softenable thermoplastic material such as adhesives, including a main body

portion having therein a melting chamber, an inlet passageway leading into one end of the chamber, and a discharge passageway in communication with said chamber and at the other end thereof. The melt chamber has a cross section which progressively diminishes from the inlet end toward the discharge end. The main body portion includes a collecting manifold disposed generally parallel to the melting chamber and opening into the discharge passageway, at the discharge end of the main body portion. A plurality of by-pass conduits disposed in the main body portion and operably connected between the melting chamber and manifold permit the melted thermoplastic material to exit from the melt chamber as it becomes liquefied by passing through the by-pass conduit means and further traversing the collecting manifold to be delivered to the discharge passageway at the discharge end of the melting chamber.

3,776,427

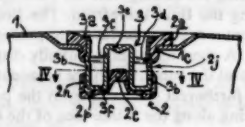
CONTAINER WITH VALVE FILLED WITH FLUID UNDER PRESSURE

Peter Remane, 12 Avenue Joubert, Sainte-Colombe-Les-Vienne, Rhone, France

Continuation-in-part of Ser. No. 886,242, Dec. 18, 1969. This application Jan. 4, 1972, Ser. No. 215,306

Int. Cl. B65d *83/00*

U.S. Cl. 222—394 **10 Claims**



A container filled with a pressurized fluid and closed by a valve, said valve being formed mainly by two pieces, one rigid piece being in the form of a cup embedded inside an aperture of the container above the other piece formed of elastomer material, which, on the one hand, forms a fluid-tight assembly joint by a peripheral portion pressed between rigid cup and the edge of said aperture, and, on the other hand, forms with a central portion a valve flap applied against an annular portion of the rigid piece; said other piece of elastomer material being between the two said portions traversed by at least one porthole for fluid passage; said pieces resting upon the outer wall of container by peripheral superposed flanges, and wherein the flange of the elastomer piece overlaps the outer wall of the container beyond the periphery of the flange of the rigid piece to form around it an annular fluid-tight joint, suitably centered with respect to a tubular filling mouthpiece adapted to be pressed axially against the container.

3,776,428

SAFETY CLOSURE USEABLE ON THREADED CONTAINER NECK

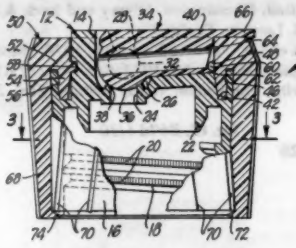
Robert E. Hazard, North Kingstown, R.I., assignor to Polytop Corporation, Slatersville, R.I.

Filed Apr. 28, 1972, Ser. No. 248,603

Int. Cl. B67d *5/32*

U.S. Cl. 222—153 **6 Claims**

A so-called safety closure having a closure body, a closure element mounted on the closure body so as to be movable between open and closed positions and a locking member mounted on the closure body so as to be capable of being moved so as to prohibit movement of the closure element from the closed position and so as to permit movement of the closure element to the open position from the closed position can be constructed utilizing an internally threaded skirt on the closure body and a sleeve on the locking member in such a manner that the closure can be utilized on a conventional threaded container neck without significant danger of the closure being removed from the neck by comparatively young children or others. Coacting ratchet means only permitting the



entire closure to be screwed or torqued on a container neck are provided between the closure body and the locking member on the skirt and on the sleeve.

3,776,429

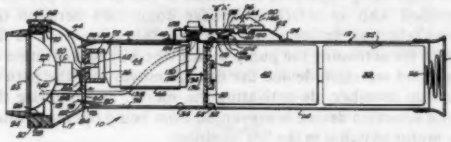
COMBINATION FLASHLIGHT AND PROPELLANT DISCHARGE DEVICE

John R. DeLucia, 118 N.E. 102nd St., Miami Shores, Fla.

Filed Feb. 28, 1972, Ser. No. 229,902

Int. Cl. F21v *33/00*

U.S. Cl. 222—162 **11 Claims**



A device, incorporating the conventional configuration, appearance, weight and handiness of a flashlight, which doubles as a flashlight and a protective means incorporating a three position switch, a first or off position for deactivating the device, a second position for completing a circuit to the flashlight bulb through a conventional battery energized circuit and a third position for discharging a propellant from a capsule, enclosed within the housing, in the general direction in which the flashlight is aimed, the circuit to the bulb being energized in said third position. Interlock means are provided to prevent discharge of the propellant at all times except when the switch is in the third position.

3,776,430

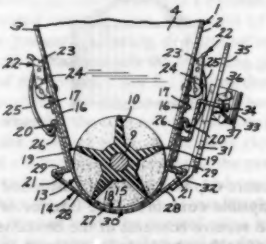
HOPPER CONSTRUCTION FOR DISPENSERS OF GRANULAR MATERIAL

Ebenhard S. Gandrud, P.O. Box 528, Owatonna, Minn.

Filed Oct. 16, 1972, Ser. No. 297,655

Int. Cl. A01c *15/08*

U.S. Cl. 222—177 **2 Claims**



A hopper bottom wall member and a cooperating gate member for mobile hoppers for dispensing granular material

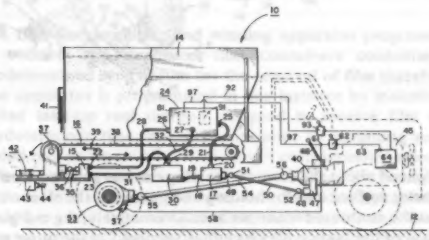
over the ground, the members each having spaced discharge openings of identical size and shape. The gate member is movable in opposite directions to move its openings between positions of full registration with the openings in the bottom wall member and material flow shut-off positions completely out of registration with the openings in the bottom wall member. The bottom wall member is mounted on the hopper for easy removal therefrom and the gate member is mounted on the bottom wall member.

3,776,431

MATERIAL SPREADER SYSTEM WITH HYDRAULIC DRIVE AND SPEED CONTROL MEANS

John R. Riley, 7139 Sharpcrest, Houston, Tex.

Filed Aug. 7, 1972, Ser. No. 278,680
Int. Cl. E01c *19/20*
U.S. Cl. 222—178 4 Claims



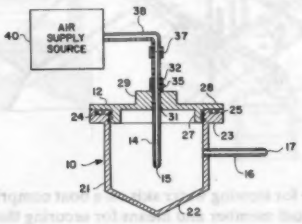
This invention relates to material spreaders of the type including: a hopper, a prime mover for propelling the hopper at predetermined speeds, a movable unloading assembly for spreading the material from the hopper on the ground at a rate dependent upon the nature of the material and the ground speed of the hopper, a hydraulic motor for driving the unloading assembly, a hydraulic pump, and a control unit between the hydraulic pump and the hydraulic motor for varying the speed of the motor. The control unit employs a fluid-flow proportioning device connected in parallel-circuit relationship with an operable 3-way valve to provide at least two speeds for the motor.

3,776,432

LYOPHILIZED SPORE DISPENSER

Artie D. Jessup, Hampton, Va., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 13, 1971, Ser. No. 188,928
Int. Cl. B67d *5/54*
U.S. Cl. 222—193 2 Claims



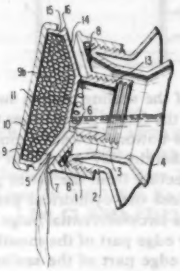
A lyophilized spore dispenser is provided which produces a finely divided, monoparticulate cloud of bacterial spores. The spores are contained within a tightly sealed chamber and a turbulator orifice conected to an air supply source provides a jet of air which stirs up the spores and causes the spores to be suspended in eddy currents within the chamber. This air jet also produces a positive pressure within the chamber which forces the spores out of an injection orifice.

3,776,433

DISPENSING CLOSURE FOR A CONTAINER

Elias Martins De Treitas, Porto Alegre, Brazil, assignor to Industries Termica Brasileira S/A, Porto Alegre, Brazil

Filed June 21, 1972, Ser. No. 265,008
Claims priority, application Brazil, Dec. 7, 1971, 008103
Int. Cl. A47j *41/00*
U.S. Cl. 222—519 12 Claims



For a container such as a vacuum or THERMOS bottle, a dispensing closure including a mouthpiece secured such as by threads onto the neck of the bottle and having an inverted conical surface for receiving a complementary shaped conical surface on a stopper for closing the container. Depending from the inverted conical surface of the mouthpiece and extending into the neck of the bottle is a cylindrical skirt having internal threads for receiving a threaded sleeve projecting from the stopper whereby the stopper may be axially moved relative to the mouthpiece to seat and unseat said conical surfaces for opening and closing the bottle. In one embodiment, the contents of the bottle are conveyed to the annular space defined by said conical surfaces when unseated, by a series of annularly arranged holes in the inverted conical surface of the mouthpiece. In another embodiment, the contents of the container are conveyed to said annular space through holes formed in the sleeve of the stopper, the latter being hollow. In both embodiments, an annular gasket is inserted between the top annular edge of the neck of the bottle and the overlying portion of the mouthpiece; and the stopper is formed in two pieces with a hollow interior filled with a thermic insulating material.

3,776,434

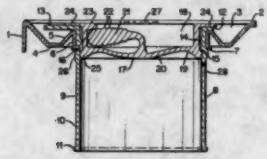
CAN WITH AN EXTENSIBLE POURING SPOUT WITH SEALING PLUG

Borge Johannes Ravn Christensen, 31 Gunnarsvel, Bagsvaerd, and Preben Bob Jacobsen, 23A Gyllesvej, Espergaerde, both of Denmark

Filed Dec. 13, 1971, Ser. No. 207,351
Claims priority, application Denmark, Dec. 11, 1970, 6301
Int. Cl. B67d *3/00*
U.S. Cl. 222—525 1 Claim

A can with an extensible pouring spout of plastic which is displaceable in a mouthpiece from a recessed position. The spout has a flange located on its upper end and is carried pendent in the can, to a pouring position projecting from the can in which it is kept by engagement of a securing part of the spout with a flat counterpiece on the mouthpiece. The secur-

ing part is formed by a mainly conical extension of the cylindrical side wall of the spout at the lower end of the spout, to which spout belongs a sealing plug of plastic for tight sealing of the upper open end of the spout. The sealing plug has a finger grip bendable thereinto and outside of circumferential projections or grooves for engagement with matching inside projections or circumferential grooves inside the spout. The can is particularly characterized in that dependable finger grip of the sealing plug branches off centrally from a central, membrane-like part of the bottom of the depression of the sealing plug, a plate part over one side of the depression, in order that the upper, outermost end of the finger grip may join firmly in

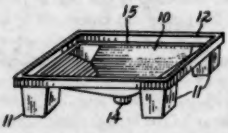


the sealed position of the sealing plug in such a manner that the innermost end of the finger grip presses the central, membrane-like part of the bottom down, bulging like a spherical shell and pressing, thereby, by pushed-in pouring spout, a lower edge part projecting from the lower peripheral part of the sealing plug against the cylindrical part of the pouring spout, same pressing a circumferential bulge out for tight contact against the lower edge part of the mouthpiece of the can, the projecting lower edge part of the sealing plug extending downwards in front of a circumferential bead in the pouring spout, when a projecting flange rests on the upper flange of the spout, when this upper flange is resting on the mouthpiece of the can.

3,776,435
PALLET

William R. Smith, Cincinnati, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed July 14, 1972, Ser. No. 271,719
Int. Cl. B65d *25/48*
U.S. Cl. 222—566 **4 Claims**



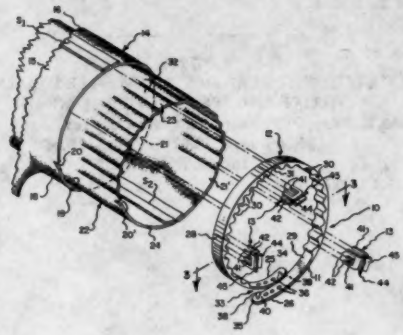
A hopper-type pallet which includes a pallet body having downwardly and inwardly sloping walls terminating in a dispensing opening and which includes a plurality of legs to permit the handling thereof by means of fork lift trucks. The pallet is adapted to be used in conjunction with a container body and is particularly suitable for the handling of flowable materials. Additionally, the pallet is of such a construction that one or more of the empty pallets can be nested together in closely spaced relationship to minimize space requirements in the course of shipping or storing the empty pallets.

3,776,436
SEWING AID DEVICE FOR, AND METHOD OF, SETTING A SLEEVE IN THE ARMHOLE OF A BODICE

Regina Reidy, 258 W. 7th St., Emporium, Pa.

Continuation-in-part of Ser. No. 221,994, Jan. 31, 1972, abandoned. This application Mar. 21, 1973, Ser. No. 343,395
Int. Cl. A41h *43/00*
U.S. Cl. 223—1 **16 Claims**

A sewing aid device has an elongated flexible strip arcuately bent into an annular form of adjustable circumferential size. The smooth outer surface of the form is arranged to be covered by the marginal portion of a bodice at the armhole. The inner surface of the form has a series of transversely extending depressions uniformly spaced therealong to provide an undulating contour. The contoured inner surface is arranged to receive an oversized sleeve cap. A plurality of clips

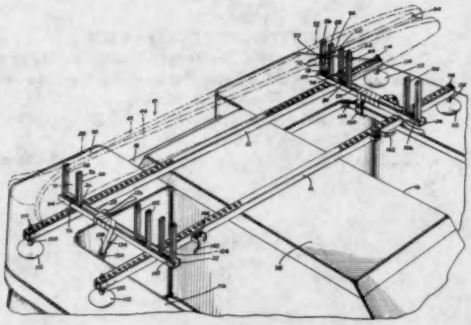


are spaced about the form for holding the marginal portion to the outer surface and for holding and gathering the sleeve cap about the contoured inner surface. Alternatively, the marginal portion of the bodice may be adhesively held to the outer surface, and the sleeve cap may be clamped against the contoured inner surface by a complementarily contoured inner strip.

3,776,437
WATER SKI STOWING DEVICE

William M. Carney, 1816 Spear St., Logansport, Ind.

Filed Feb. 23, 1972, Ser. No. 228,569
Int. Cl. B60r *9/08*
U.S. Cl. 224—42.45 R **14 Claims**



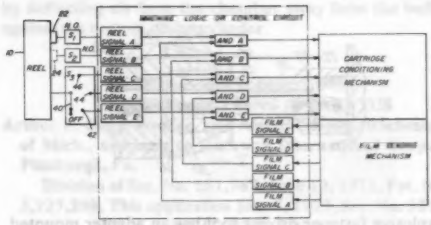
A device for stowing water skis on a boat comprising at least one elongated member and means for securing the member to the deck of a boat. A plurality of bifurcate elements are mounted adjacent the opposite ends of the elongated member, the bifurcate elements being adapted to slidably receive and frictionally engage a pair of water skis edgewise therein. The bifurcate elements are arranged to provide necessary clearances for protruding parts of the water skis.

3,776,438

FILM DISCRIMINATING AND WINDING APPARATUS

Willis G. Calberg, Hilton, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 15, 1972, Ser. No. 253,068
Int. Cl. G03d 15/00; B26f 3/00
U.S. Cl. 225—93 10 Claims



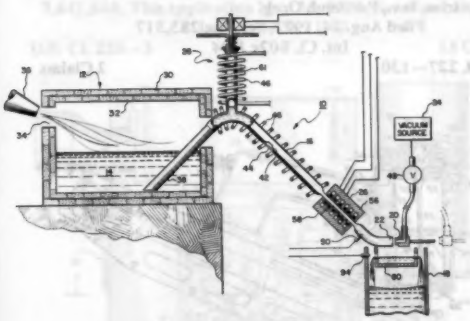
A film discriminating and winding apparatus programmed to receive and condition film containers containing a predetermined type of film for the removal of film therefrom. The apparatus is programmed in one instance by mounting a coded take-up reel thereon designed to receive film of a predetermined type, in another instance by mounting such a coded reel and manually positioning a corresponding selector-switch, or by a combination of the two. The film containers such as cartridges are provided with film-identifying indicia identifying the type of film contained therein, and the apparatus provided with an indicia or film sensing mechanism for sensing the type of film. If the film in the cartridge matches the film for which the reel is coded, the apparatus is enabled for operation, and when operated conditions the cartridge for the removal of film therefrom. The removed film is fed through an operating station, such as a splicing station, and then onto the take-up reel of the reel winding apparatus.

3,776,439

FAIL-SAFE LIQUID PUMPING AND FLOW CONTROL SYSTEM

Joseph F. Settle, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 3, 1972, Ser. No. 240,417
Int. Cl. C21b 7/14
U.S. Cl. 266—38 4 Claims



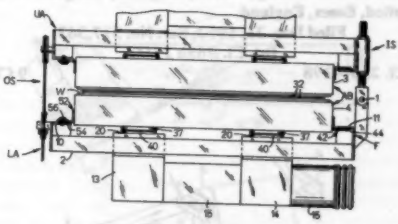
A fail-safe liquid metal pumping and flow control system is described wherein metal is transferred from a holding furnace to a continuous casting mold, individual molds, ladles, etc., through a siphon having an electromagnetic pump with dual direction output situated along the length of the siphon to control the flow of liquid metal therethrough. The system initially is primed by applying vacuum to the siphon through a suitable valve and the siphon is vented to terminate liquid metal flow upon sensing of an anormal process condition, e.g., loss of electrical power to the electromagnetic pump, to inhibit further siphoning of liquid metal from the reservoir. Also disclosed is a pumping system wherein the holding furnace is initially disposed at an attitude to inherently raise the liquid metal level into operating engagement with an electromagnetic pump drawing liquid metal from the holding furnace. The furnace then is tilted upon the subsequent sensing of an anormal process condition to gravitationally return metal from the electromagnetic pump to the holding furnace. The electromagnetic pump thus provides the lifting force to drive the molten metal up to and over the pouring spout, thereby providing complete electrical control of the pouring rate, while failure of power or the pump will cause the flow to terminate to provide the fail-safe feature.

3,776,440

WEB HANDLING APPARATUS

John W. Frost, and Paul H. Stibbe, both of De Pere, Wis., assignors to TEC Systems, Inc., De Pere, Wis.

Filed Jan. 30, 1973, Ser. No. 327,995
Int. Cl. B65h 17/32
U.S. Cl. 226—97 22 Claims



Apparatus for handling a running web including oppositely disposed air bars for drying and/or positioning the web as it passes between the air bars. Means are provided for quickly and easily inserting and removing the air bars for replacement or maintenance and also for insuring that the air bars are located precisely with respect to one another and with respect to the web.

An elongated air bar for web handling apparatus and having an air receiving hole intermiediate its length and also having bracket means extending from its ends for quick attachment to the apparatus. The air bar also has guide means for guiding the hole in the bar into precise registry with an air supply hole of an air supply duct.

3,776,441

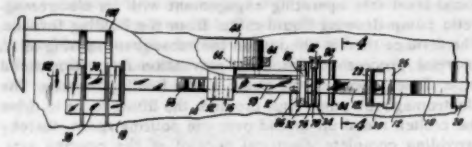
STRIP MATERIAL FEEDING DEVICE

Frederick F. Forthmann, Jr., Washington Twp., Bergen County, and Earl F. Beezer, Saddle Brook, both of N.J., assignors to Forthmann Label Services Company, Westwood, N.J.

Filed May 10, 1972, Ser. No. 252,315
Int. Cl. B65h 17/42
U.S. Cl. 226—114 9 Claims

A device for facilitating the feed of strip material, particularly, a continuous length of labels which are to be cut away

from the strip material and folded and packed into containers includes, a reel having a continuous winding of the strip material which is freely rotatably mounted. The strip material is guided through a guide element and over a table where it is advanced along a feed path by an oscillatable pusher finger which cyclically engages against the material and moves it



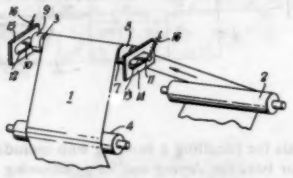
along the feed path. The construction includes holding means located between the pusher and the reel supply for holding the label periodically in order to permit looping means to engage the label strip material, pull a length of it off the reel and form it into a loop between the holding means and the reel supply. The pulled off loop is subsequently fed by the pusher.

3,776,442

STEERING DEVICE FOR TRAVELLING WEB

Kenneth Arthur Ridley, Ilford, England, assignor to Ilford Limited, Essex, England

Filed Dec. 21, 1972, Ser. No. 317,363
Int. Cl. B65h *23/32*
U.S. Cl. 226—198 **9 Claims**



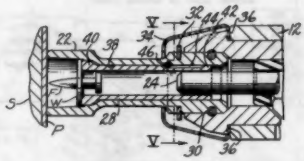
A steering device for a travelling web is described which comprises a system of rotatable rollers having an approach roller, at least one steering roller and a departure roller; the axes of the approach and departure rollers are parallel to each other and fixed and the axis of the stearing roller is diplaceable, from a position parallel to that of the other rollers, in one place, and the ends of the rollers to the system are so arranged that the travelling wet laps each of the approach, steering and departure rollers in turn. The steering roller comprises a rotatable main portion over which the web laps when the axis of the steering roller is parallel to those of the other rollers, and at least one extension roller portion is axially connected to an end of the rotatable main portion and is separably rotatable; and a spindle is connected to each such extension roller portion present, and each spindle located in a guide member containing a parallel sided slot, the parallel sides of which are so positioned in relation to the approach and departure rollers that the spindle therein is displaceable only along the tangent of an ellipse constructed on the ends of the approach and departure rollers as foci and passing through the end of the stearing roller. Means for biassing each spindle present towards that end of the slot in which the spindle is located which is the approach end in regard to the travelling web are also provided.

3,776,443

FASTENER DRIVING TOOL WITH SLIDABLE FASTENER GUIDE

Richard W. Oefinger, Shelton, Conn., assignor to USM Corporation, Boston, Mass.

Filed May 23, 1972, Ser. No. 256,086
Int. Cl. B25c *1/14*
U.S. Cl. 227—10 **5 Claims**



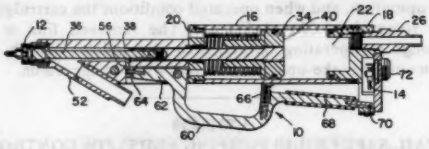
An explosive fastener driving tool has an adapter mounted on the muzzle end of the barrel and slidably holds a gas actuated liner for receiving a ram. The liner bears on the washer portion of a fastener while the ram impacts the fastener head to insure that the fastener piercing point is guided for efficient work penetration.

3,776,444

LOOP FASTENER GUN ASSEMBLY

Donald E. Kuehn, Bay Village, and John Keith Lyon, Lorain, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed June 21, 1971, Ser. No. 154,936
Int. Cl. B25c *1/04*
U.S. Cl. 227—130 **5 Claims**



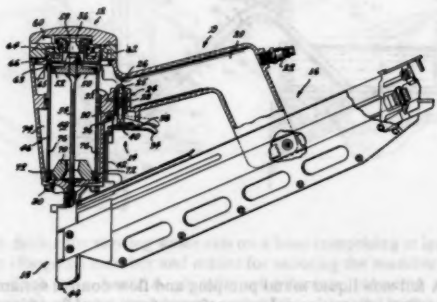
A loop type fastening mechanism which utilizes an air operated plunger which pushes the fastener into engagement with the support.

3,776,445

PNEUMATIC FASTENER DRIVING DEVICE

Raymond Visher Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Filed Aug. 24, 1972, Ser. No. 283,517
Int. Cl. B02c *1/04*
U.S. Cl. 227—130 **2 Claims**



A pneumatic fastener driving device wherein a cylinder houses a piston that is adapted to be driven therethrough by

air pressure. A driving blade connected to the piston extends through the cylinder and strikes a fastener, e.g., a nail. A buffer in the bottom of the cylinder cushions the impact of the piston upon reaching the end of its stroke. A chamber surrounding the cylinder is supplied with air pressure during the downward stroke of the piston which is released at the end of the stroke against the bottom side of the piston to return it to its starting position. An air deflecting collar protects the buffer by deflecting air from the chamber away from the buffer and against the bottom of the cylinder.

3,776,446

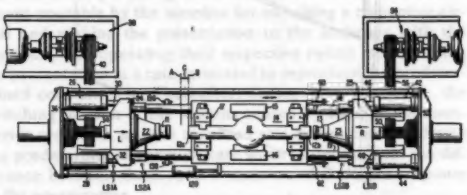
FRICTION WELDING APPARATUS

Arthur F. Gage, Warren, and Alex F. Stamm, Rochester, both of Mich., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Division of Ser. No. 151,767, June 10, 1971, Pat. No. 3,727,298. This application Jan. 5, 1973, Ser. No. 321,489

Int. Cl. B23k *27/00*

U.S. Cl. 228—2 **6 Claims**



Method and apparatus for friction welding two rotating end workpieces to a non-rotatable central workpiece wherein one end workpiece is held axially stationary while the other end workpiece is moved axially into engagement with the central workpiece and then axially displaces the central workpiece into engatement with the one end workpiece. The central workpiece is mounted on a floating table which is axially displaceable to accomplish the described welding cycle.

3,776,447

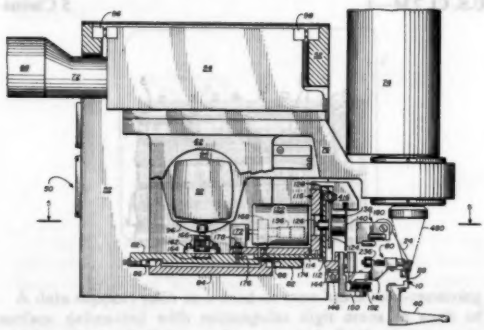
AUTOMATIC SEMICONDUCTOR BONDING MACHINE

Anthony L. Adams, Dallas; Gerald A. Yearsley, Garland; Marion I. Simmons, Richardson, and Billy P. Yager, Lake Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 837,485, June 30, 1969, Pat. No. 3,641,660. This application May 26, 1971, Ser. No. 147,251

Int. Cl. B23k *21/00*

U.S. Cl. 228—3 **13 Claims**



An automatic machine for ball bonding a lead wire to an expanded contact of a semiconductor device and stitch bonding the wire to a lead of the semiconductor package is described. The machine automactically aligns an X-Y table in predetermined relationship to the semiconductor device by means of an electrooptical system. A bonding needle mounted on the table is then moved in a predetermined manner to press the balled end of the wire against the expanded contact. Wire is then positively payed out as the bonding needle is moved to the lead where a stitch bond is performed. After the stitch bond, the needle is raised to pull out a length of wire, then the wire is clamped to break the wire near the stitch bond. The length of the wire protruding from the needle is then passed through a flame to form a new ball preparatory to a new cycle. The wire is payed out to the bonding needle from a spool supported by an air bearing. After the ball is formed, reverse torque is applied to the spool to pull the ball up against the end of the bonding needle. After the ball bond, forward torque is applied to pay out the wire, and the wire is positively fed through the needle by an air stream. After the stitch bond is completed and the ball reformed by the flame, reverse torque is again applied to the spool to draw the ball up against the end of the needle preparatory to the next bonding cycle.

3,776,448

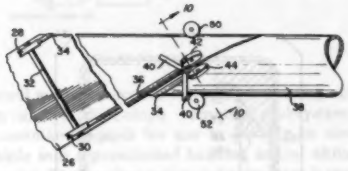
APPARATUS FOR CONTINUOUS PRODUCTION OF SPIRAL PIPE

James Eugene Fay, 4204 Nelson Rd., Middletown, Ohio

Division of Ser. No. 107,748, Jan. 19, 1971, Pat. No. 3,722,075. This application Mar. 26, 1973, Ser. No. 344,607

Int. Cl. B23k *29/00*

U.S. Cl. 228—5 **14 Claims**



A method and apparatus for continuously producing spiral pipe from sheet material including feeding a strip of the sheet material into a spiral pipe forming machine, continuously deforming a portion of the longitudinal edges of the sheet material so as to bend the edge downwardly toward the axis of the formed pipe and out of the normal plane of the sheet material, forming the sheet material into a spiral tube and bringing the deformed edges into parallel face to face abutting relationship, welding the edges into a seam, and reforming the deformed portion of the sheet material to provide a smooth forged weld.

3,776,449

WELDING MACHINE FOR CONNECTING TUBES TO A WALL

Nils Ake Curt Jungle, Goteborg, Sweden, assignor to Aktiebolaget Gotaverken, Goteborg, Sweden

Filed June 12, 1972, Ser. No. 261,931

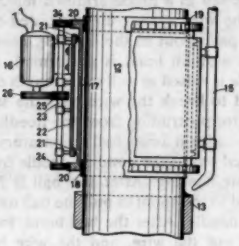
Claims priority, application Sweden, June 16, 1971, 7791/71

Int. Cl. B23k *5/00*

U.S. Cl. 228—29 **1 Claim**

When fitting a large number of parallel tubes to the end plate of a heat exchanger in which each individual tube is pushed through a nipple in the end plate and reaches a considerable distance into the heat exchanger, certain difficulties are encountered in performing a satisfactory welding joint between the tube and the nipple. The space available is often limited and manual or even automatic welding by conventional machines is practically impossible. The disclosure

proposes a machine which can easily be fitted around the tube, to be carried thereby and retained by simple means in



the proper position adjacent to the part of the tube to be welded. The machine includes a welding torch and means for rotating the same around the tube.

3,776,450

FOIL FOR CLOSING EASILY OPENABLE PACKAGES

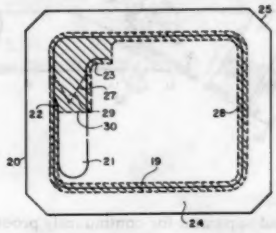
Od W. Christensson, Bromma near Stockholm, Sweden, assignor to Christenssons Maskiner & Patenter Aktiebolag, Stockholm, Sweden

Filed Feb. 14, 1972, Ser. No. 226,113

Claims priority, application Sweden, Mar. 1, 1971, 2541/71

Int. Cl. B65d *17/00, 41/00*

U.S. Cl. 229—7 R **6 Claims**



A closing foil for easily openable packages of the type wherein the foil is to be laid over the upwardly open mouth of the package and adhered to the mouth of the package. The foil comprises two layers evenly contacting each other, the inner layer being provided with an arrow point-like tear line at the beginning of the tearing area, whereas the exterior layer is provided with tear lines along the continuation of the tearing area, as well as with a tongue for initiating the tearing. One end of the arrow point-like cut ends at a cut in the exterior layer which extends about the exterior layer inwardly of the periphery of exterior layer. The two layers are adhered to each other such that in each of the layers the cuts or tear lines are tightly covered by uncut portions of the other layer, and are adhered along the tear lines. The part of the exterior layer forming the tongue is not connected to the interior layer.

3,776,451

GUSSETED TYPE BAGS

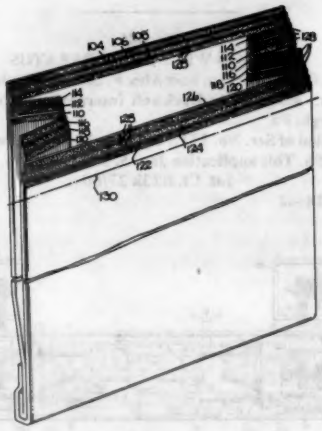
John J. Goodrich, Pensacola, Fla., and Chester E. Waxlax, New City, N.Y., assignors to St. Regis Paper Company, New York, N.Y.

Division of Ser. No. 467,416, June 28, 1965, Pat. No. 3,687,356. This application May 26, 1972, Ser. No. 257,253

Int. Cl. B65d *31/02*

U.S. Cl. 229—55 **6 Claims**

A bag of tubular form comprising a plurality of contiguous plies of flexible sheet material, said bag having a front surface and an oppositely disposed rear surface adapted to overlap said front surface at one end of said tube when said bag is in its assembled condition, said bag being longitudinally and reversely creased along diametrically opposed portions to provide a pair of oppositely disposed gussets interposed between said front and rear surfaces, each of said gussets having a front portion and stepped rear portion adapted to overlap said front portion within the overlapped area of said front and rear sur-



faces at said end of the tube when said bag is in its assembled condition, a bonding agent in a dormant state substantially covering said exposed surfaces at said end of the tube when said bag is in its assembled condition, and said bonding agent being reactivatable to close said bag end, the opposite end of said tube being the reverse of said one end and being folded over and adhered to a surface of said tube by means of said bonding agent, the innermost ply being preferably of a heat sealable material.

3,776,452

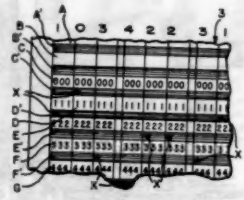
METHOD FOR ENCODING PUNCH CARDS

Anthony E. Maciorowski, 4913 N. Normandy Ave., Chicago, Ill.

Division of Ser. No. 157,414, June 28, 1971, Pat. No. 3,743,175. This application Mar. 6, 1973, Ser. No. 338,539

Int. Cl. G06k *1/04*

U.S. Cl. 234—1 **5 Claims**

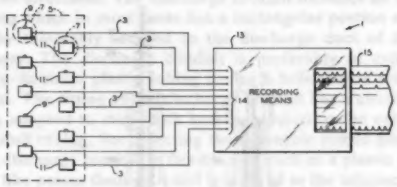


A method for coding a record card with paraindex and index punches wherein the card is punched with paraindex punches and such punches are used to control the punching index punches.

3,776,453
AUDIENCE RESPONSE MEASUREMENT METHODS AND APPARATUS

Warren W. Friedman, 705 Olive St., St. Louis, Mo.

Filed Sept. 29, 1972, Ser. No. 293,466
Int. Cl. G07c *13/00*; G01d *9/00*; A61b *5/16*
U.S. Cl. 235—52 6 Claims



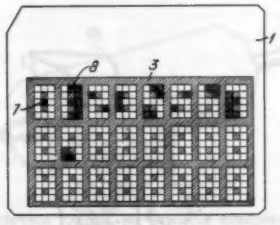
Audience response to a presentation is measured by a method involving establishing a plurality of circuits through the audience, providing the audience members with switch means operable by the member for switching a respective circuit and making the presentation to the audience with the members then operating their respective switch means during the presentation at a rate estimated to reproduce the predetermined constant rate. Thereafter, during the presentation, the switching of each of the circuits caused by each of the members is recorded, and the recorded rate is then compared with the predetermined constant rate so as to derive from the difference between these rates a measure of audience response to the presentation.

Apparatus of the invention includes a plurality of circuits through the audience, and a plurality of switch means each connected with corresponding ones of the circuits and each operable by an audience member for switching the corresponding circuit, the rate of switch operation being at a rate determined by the member to reproduce a predetermined constant rate of switch operation. The apparatus includes a device such as a strip chart recorder which is responsive to the switching of each circuit for determining the actual rate of switch operation during the presentation.

3,776,454
DATA SUPPORTS FOR NUMERICAL DATA

Lloyd Leslie Llewellyn Jones, 36 Primrose Ct., 159 Hydethorpe Rd., London S.W. 12, England

Filed Aug. 18, 1970, Ser. No. 64,702
Claims priority, application Great Britain, Sept. 12, 1969, 45,220/69
Int. Cl. G06r *1/00*, *19/06*
U.S. Cl. 235—61.12 R 5 Claims

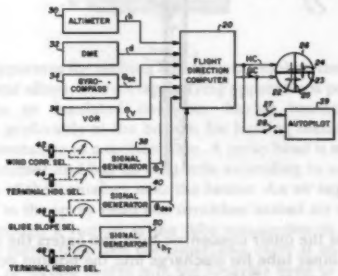


A data support such as a card or tape has a data-receiving surface delineated with rectangular digit areas in each of which a decimal digit can be recorded. Each digit area is delineated by a dark rectangular frame printed on the data-receiving surface, the area of the surface within the frame being subdivided into an array of elementary square areas arranged in three columns each of five elementary areas. Predetermined ones of the elementary areas, the second and fourth in the middle column, of each digit area are prerecorded by overprinting with dark ink. By subsequently similarly recording in selected ones of the remaining elementary areas in a digit area any one of the 10 decimal digits may be represented in visually recognisable form.

3,776,455
TERMINAL GUIDANCE SYSTEM

Shu W. Gee, Lancaster, Canada, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 6, 1972, Ser. No. 232,021
Int. Cl. G06g *7/78*
U.S. Cl. 235—150.22 14 Claims



A terminal guidance system including a heading command subsystem and a glide-slope command subsystem which develop command signals for use in guiding an aircraft or other vehicle into a preselected heading and/or altitude at a terminal point. The heading command subsystem is responsive to certain input data and continuously develops command signals for use in directing the aircraft from a remote location to a terminal point in such a manner that upon arrival it has a preselected terminal heading. The glide-slope command subsystem is responsive to certain other input data and continuously develops command signals for use in controlling the rate of descent of the aircraft in such a manner that it will have a preselected altitude and glide-slope upon arrival at the terminal.

3,776,456
DIRECT FIRED WATER HEATER THERMAL COMPENSATING DIP TUBE

John P. Eising, Oconomowoc, Wis., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Continuation-in-part of Ser. No. 161,555, July 12, 1971, abandoned. This application Apr. 21, 1972, Ser. No. 246,218
Int. Cl. F24f *1/00*
U.S. Cl. 236—93 6 Claims

A dip tube used as a conduit of cold water into a direct fired water heater is made of two concentric tubes with one tube having a higher coefficient of expansion than the other. Longitudinally spaced apertures are provided in the upper portion of the tubes which are offset under predetermined low temperature conditions. The apertures of one tube are placed in registry with the apertures of the other tube upon increase in the temperature of the water stored in the tank which expands one tube longitudinally with respect to the other to discharge the incoming cold water into the tank through the apertures at various levels within the upper portion of the tank. In another embodiment, the dip tube, formed of two concentric tubes with one having a greater coefficient of expansion, is con-

nected to a fitting which converts the pressure head of the incoming cold water to a velocity head. When the open end of the inner concentric tube is drawn off its seat on the nozzle by longitudinal expansion of the outer concentric tube due to a rise in temperature of the stored water, this exposes the open end of the inner tube and hot water in the tank to the zone of lesser static pressure created by the incoming cold water and hot water is drawn from the upper portion of the tank through

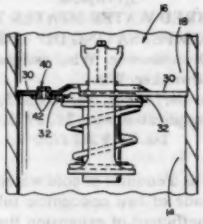
apertures in the outer concentric tube and enters the exposed end of the inner tube for discharge into the bottom portion of the water heater. Both embodiments provide for space between the concentric tubes for confining water from inside the water heater between the tubes to provide a time lag to control the rate of response of the tubes proportionally to the incoming cold water and the water in the heater so that the apertures will not be opened or closed too rapidly.

3,776,457

FAIL-SAFE DEVICE FOR THERMOSTATIC VALVES

Paul Cardi, 1375 Park Ave., Cranston, R.I.

Filed Oct. 1, 1971, Ser. No. 185,665
Int. Cl. F01p 7/16
U.S. Cl. 236—34.5 **6 Claims**



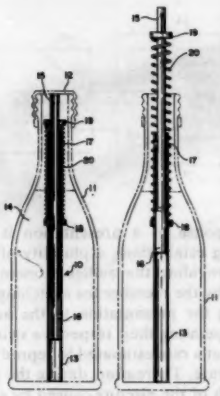
A fail-safe device for thermostatic valves featuring a support structure with an aperture providing a by-pass passage around the valve, and a plug fitting within and blocking the by-pass passage and having a retaining structure of temperature softening material, stiff while at a colder temperature to retain the plug in the aperture and softer while at a hotter temperature to permit the plug to be removed from the orifice if the valve is closed although retaining the plug in the aperture when the valve is open.

3,776,458

TELESCOPIC DRINKING STRAW

Lorenzo Chunga, Sr., Brooklyn, N.Y., assignor to Creative Product Lines Inc., Somerset, N.J.

Filed Oct. 22, 1971, Ser. No. 191,689
Int. Cl. A47g 21/18
U.S. Cl. 239—33 **10 Claims**



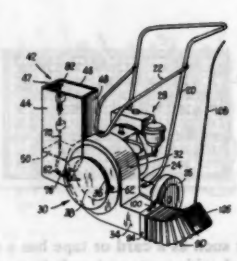
A telescopic drinking straw in which a first elongated tubular cylinder has a second tubular cylinder slidably disposed therein. The first cylinder and the second cylinder are provided with annular flanges which retain the ends of a coil spring disposed over the cylinders. The spring forces the second cylinder vertically upward out of the first cylinder when the cap of a container in which the straw is packaged is removed, thereby making the straw available to the user for drinking of the liquid in the container. The outer cylinder of the drinking straw may also be provided with a plurality of slots at a particular point along its length. One end of the telescopic outer portion is affixed to the inner section of the straw, so that when the outer section is compressed downwardly to be packaged into a bottle, the portion containing the slots will extend outwardly and act as a spring forcing the outer telescopic section against the inner surface of the container cap. When the cap is removed, the extended portions contract inwardly, forcing the telescopic section out of the container.

3,776,459

SPRAYER ATTACHMENT FOR LEAF BLOWER

Gene F. Bonvicini, Morehouse Rd., Easton, Conn.

Filed Jan. 8, 1973, Ser. No. 321,764
Int. Cl. A01n 17/08
U.S. Cl. 239—77 **10 Claims**



A garden spray attachment for use with high-powered leaf blowers and the like, comprising a tank or container for insecticide liquid, having a discharge spout at the bottom which is

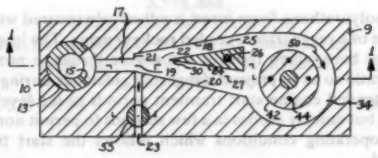
controlled as to the rate of flow by a manually adjustable valve. The tank has means for attaching it to the structural parts of the leaf blower, preferably the casing of the centrifugal air impeller, in such a manner that the discharge line from the tank can be brought directly to the air intake of the impeller. The attachment additionally includes a discharge conduit which has a nozzle portion that is movable with respect to the remainder, so as to direct fluid passing through it in different directions. The discharge conduit includes an adapter fitting which in most cases has a rectangular portion adapted to be releasably secured to the discharge duct of the leaf blower. The discharge conduit is preferably of cylindrical large-diameter plastic tubing having a helical wire reinforcement. The fitting of the discharge conduit has a circular portion adapted to mate with and be secured to the cylindrical conduit tubing. For directing the moveable nozzle portion of the discharge conduit, a flexible line such as a plastic rope or the like passes through it and is secured to the adapter fitting, said line being manually manipulated as by pulling, and causing bending of the conduit so as to direct the discharge spray to the desired areas.

3,776,460

SPRAY NOZZLE

Barry S. Fichter, Dunellen, N.J., assignor to American Standard Inc., New York, N.Y.

Filed June 5, 1972, Ser. No. 259,649
Int. Cl. B05b *1/08, 1/34*
U.S. Cl. 239—101 **5 Claims**



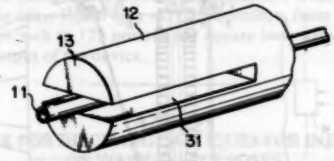
A nozzle comprising a swirl chamber having an exit port for discharging a whirling conical spray. The swirl chamber is supplied with fluid through a fluidic switch which in turn is controlled by conditions in the swirl chamber in such fashion as to periodically disrupt the whirling action and alter the spray pattern discharged from the exit port.

3,776,461

NOZZLE DEVICE FOR INK JET PRINTING EQUIPMENTS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 4, 1971, Ser. No. 186,340
Int. Cl. B05b *9/00*
U.S. Cl. 239—125 **4 Claims**



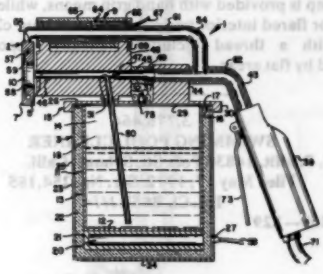
A nozzle device for ink jet printing equipments having a tube whose open end constitutes an ink nozzle exit wherein there is provided a protective member in which there is formed an extremely narrow slit extending horizontally inward from its end face, said slitted member being fitted around the periphery of the tube with the nozzle portion thereof exposed so as to allow the ink excessively flowing out of the exit end of the nozzle to be sucked into the slit by the capillary suction afforded thereby.

3,776,462

METAL SPRAYING APPARATUS

Paul H. Payne, Jr., 8512 Lee's Summit Rd., Kansas City, Mo.

Filed Jan. 8, 1973, Ser. No. 321,652
Int. Cl. B05b *1/24*
U.S. Cl. 239—134 **10 Claims**



An apparatus for melting and spraying molten fusible metals and metal alloys. The metal spraying apparatus is portable and includes an insulated container having heaters installed therein preferably at the bottom for heating metal contained in the container to a molten state. A spray head is mounted on the container and has an inlet tube extending to adjacent the bottom of the container near the heater. An air supply is connected to the spray head and furnishes heated air under pressure through a venturi at the tube connection to siphon the molten metal from the container and carry it to a spraying nozzle. A second heater is in the spraying head to heat a portion of the air from the air supply to have the air blast in the spraying head at a temperature of or above the melting point of the metal. The air blast siphons molten metal, atomizes same and propels the molten metal through the nozzle onto surfaces for adhesion therewith in the form of a coating.

3,776,463

PLASTIC HOSE, RISER AND CLAMPING SYSTEM

Gerhard J. Dyck, Saskatoon, Canada, assignor to Dyckes Sprinkler Co. Ltd., Saskatchewan, Canada

Filed July 12, 1972, Ser. No. 270,995
Claims priority, application Canada, July 23, 1971, 118952
Int. Cl. B05b *15/10*
U.S. Cl. 239—204 **15 Claims**

A composite assembly including as essential elements a plastic material conduit, a novel riser assembly and a spray nozzle is provided. The conduit is provided with a hollow stem. The novel riser assembly includes a finite length of

plastic tubing having one outwardly flared end. That end is adapted to be secured to, and envelope, the hollow stem on the conduit. The other end of the plastic tubing is inwardly tapered. That end is adapted to be secured to, and envelope, a sprinkler head stem. A self-threading hollow collar hose clamp is associated with each end of the plastic tubing, each hose clamp being tapered or flared to conform to the taper or flare at the respective end of the tube. The outer periphery of the hose clamp is provided with hand grip means, while the inward tapered or flared interior periphery of each hose clamp is provided with a thread includng helically disposed ridges separated by flat areas.

3,776,464

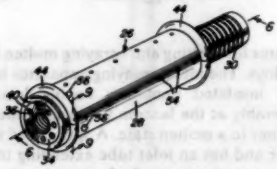
SWIMMING POOL CLEANER

Lester M. Proffit, 14836 Polk St., Sylmar, Calif.

Filed May 17, 1972, Ser. No. 254,185

Int. Cl. B05b *1/14*

U.S. Cl. 239—229 11 Claims



A cylindrical body including inlet and outlet ends with the inlet end provided with structure for connection with the outlet end of a flexible water supply hose. The cylindrical body includes circumferentially spaced longitudinally extending rows of small diameter apertures and an end wall provided with a main central aperture and a plurality of secondary apertures spaced circumferentially about the central aperture. Also, the cylindrical body includes fluid flow restricting and turbulence producing structure registered with the inlet end of the main outlet aperture and a cylindrical pipe section having an outside diameter smaller than the inside diameter of the cylindrical body is held captive within the latter and freely laterally shiftable therein for gravity falling to the lowest point of the inner periphery of the cylindrical body. Further, the opposite ends of the cylindrical body are provided with resilient circumferentially extending cushioning rings.

3,776,465

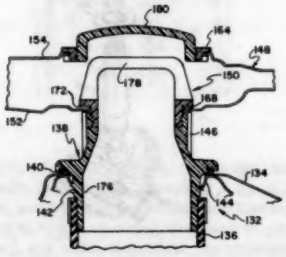
LIQUID SPRAY DEVICE

Philip D. Baker, Jeffersonville, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Aug. 17, 1972, Ser. No. 281,498

Int. Cl. B05b *3/06*

U.S. Cl. 239—251 12 Claims



There is disclosed a dishwasher having an improved bearing and seal construction for the spray arm. The spray arm is mounted for limited vertical movement with respect to the outlet conduit of a pump. When pump pressure is applied to the spray arm, the spray arm is lifted out of load supporting engagement with the conduit and engages a seal which reduces liquid leakage around the spray arm. When pump pressure is interrupted the spray arm returns to the supported position, allowing the spray arm to drain. The spray arm is removably mounted onto the conduit to allow for servicing of the dishwasher.

3,776,466

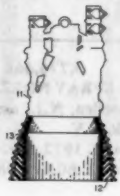
POLYURETHANE FOAM INSERT FOR OVEREXPANDED ROCKET ENGINE NOZZLES TO PREVENT START TRANSIENT SIDELOADS

William L. Ray, 229 Richmond Dr., N.W., Huntsville, Ala.

Filed Jan. 19, 1973, Ser. No. 324,946

Int. Cl. B64d *33/04*

U.S. Cl. 239—265.15 6 Claims



A polyurethane foam insert is adhesively secured within the nozzle of a regenerative cooled rocket engine. The insert has a central bore which reduces the engine throat to nozzle exit area ratio so as to prevent dangerous sideloads during normal or extended engine start transient periods at sea level conditions, but quickly erodes in a few seconds to permit normal engine operating conditions which follows the start transient period.

3,776,467

MEANS FOR ACTUATING A MULTIPLE TUBE JET DEFECTOR DEVICE

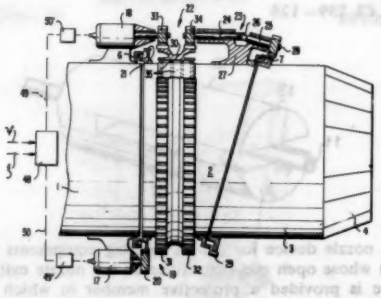
Fritz Riemerschmid, Starnberg, Germany, assignor to Motoren- und Turbinen-Union Munchen, GmbH, Munich, Germany

Filed Feb. 25, 1972, Ser. No. 229,305

Claims priority, application Germany, Feb. 26, 1971, P 21 09 205.7

Int. Cl. B64c *15/04*

U.S. Cl. 239—265.35 24 Claims



A multiple tube jet deflector device having two tubes arranged in series downstream of a jet engine fixed inlet pipe. The upstream tube is rotatable connected to the downstream end of the inlet pipe along a first bearing face disposed perpendicularly to the centerline of the inlet pipe. The

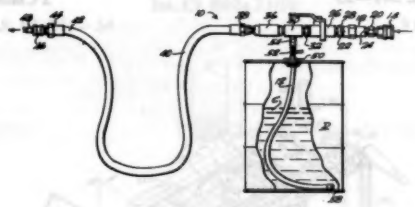
downstream end of the downstream tube is constructed as an exhaust nozzle. The downstream tube is rotatably connected to the downstream end of the upstream tube along a second bearing face which is inclined relative to the first bearing face such that relative rotation of said tubes effects an angular deflection of the centerline of the downstream tube with respect to the centerline of the inlet pipe. Actuating devices are provided for effecting independent rotation of each of the tubes with respect to the inlet pipe. These actuating devices include ring gears attached to the circumference of the respective tubes and pinions or chain and sprocket arrangements for rotatably driving these ring gears. Actuators are arranged on the circumference of the inlet pipe for driving the pinions or sprockets. A transmission arrangement for coupling the actuator to the pinion or sprocket associated with the downstream tube is rotatably supported on the circumference of the upstream tube by ball bearings or the like. This transmission arrangement includes an annular member including two ring gears disposed about the circumference of the upstream tube. One of these last mentioned ring gears is driven directly by the actuator for the downstream tube while the other is coupled to a universal drive joint which in turn is connected to the pinion or sprocket for driving the ring gears on the downstream tube. A shroud formed by an extension of the upstream tube over the outside of the inlet pipe may be provided for mounting much of the gearing and transmission structure so as to isolate this structure from heat in the gases passing internally of the tubes. An afterburner or reheating means may also be provided in said tubes.

3,776,468

SPRAY MIX APPLICATOR

William K. Davenport, 125 W. 51st St., Hialeah, Fla.

Filed Mar. 31, 1972, Ser. No. 239,877
Int. Cl. B05b 7/24
U.S. Cl. 239—310 **5 Claims**



The spray mix applicator of the present invention is a device for mixing and spraying a mixture of two liquids at a prescribed flow rate in a prescribed proportion to each other, one liquid being under atmospheric pressure while the pressure of the other liquid may vary, for instance, from 15 pounds per square inch to 125 pounds per square inch without affecting the output of the device.

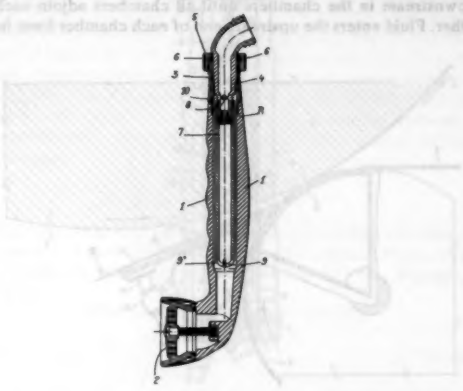
3,776,469

DEVICE FOR DISCHARGING LIQUID FOR INJECTION OR WASHING PURPOSES

Jean J. Joannon, Los Chenes Verts, Cap D'Antibes, France

Filed Mar. 2, 1972, Ser. No. 231,123
Claims priority, application France, Feb. 15, 1972, 7204931; Mar. 22, 1971, 7111013
Int. Cl. B05b 1/12, 7/02, 15/06
U.S. Cl. 239—446 **2 Claims**

A device for bathroom equipment and the like, comprising a casing, a liquid inlet member, and a nozzle assembly which may be at will located inside or outside the casing, in which the liquid inlet member communicates with an outlet provided in the casing when the nozzle assembly is inside the casing, or with any nozzle of the assembly when the latter is outside the casing. The device further comprises a valve for controlling the liquid flow, the open or closed condition of which depends on the inside or outside condition of the nozzle assembly. A sprinkler may be connected to the casing at its liquid outlet, and the nozzle assembly may comprise a hollow portion with the nozzle at an end thereof and a slidable sleeve srurrounding this hollow portion.

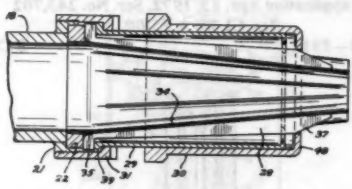


3,776,470

VARIABLE NOZZLE

Takuzo Tsuchiya, Minneapolis, Minn., assignor to General Mills, Inc., Minneapolis, Minn.

Filed Sept. 30, 1971, Ser. No. 185,000
Int. Cl. B05b 1/32
U.S. Cl. 239—534 **9 Claims**



A nozzle system is provided having a nozzle with variable and controllable orifice.

3,776,471

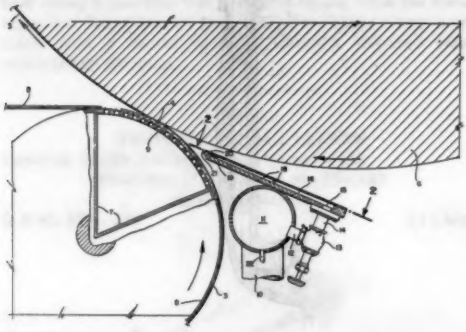
METHOD AND APPARATUS FOR DISTRIBUTING FLUIDS

Robert W. Meyer, Springfield, and John L. Pedrick, Folsom, both of Pa., assignors to Scott Paper Company, Delaware County, Pa.

Filed Nov. 22, 1971, Ser. No. 200,923
Int. Cl. B05b 1/14
U.S. Cl. 239—553.5 **8 Claims**

A method and apparatus are disclosed for discharging fluid in a sheetlike flow made up of contiguous flow zones extending across the width of the sheetlike flow. The fluid flow rate in each flow zone is individually controllable and is virtually unaffected by the fluid flow in the adjacent flow zones. The method consists of expanding the widths of a plurality of spaced-apart, individually flow-rate-controlled streams until all streams are contiguous and thus form an uninterrupted

sheetlike flow, while maintaining substantially uniform flow rate distribution profile across the width of each stream. The apparatus consists of a plurality of diffusion chambers arranged in a line and with the flow direction of each chamber parallel to each other. The widths of the chambers widen downstream in the chambers until all chambers adjoin each other. Fluid enters the upstream end of each chamber from its



individual, valve-controlled conduit. The invention has particular value in applying fluid to a wide surface where the amount of fluid desired to be applied varies for different areas across the width of the surface. A particular use for the invention is to aid uniform drying of a wet paper web on a papermaking machine by controlling the flow rate distribution profile across the width of a sheetlike flow of steam discharged against the paper web.

3,776,472

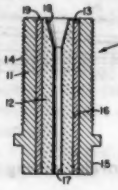
TOOL ASSEMBLY

Everett H. Lock, Houston, and Joe K. Heilhecker, Bellaire, both of Tex., assignors to Esso Production Research Company, Houston, Tex.

Division of Ser. No. 36,834, May 13, 1970, Pat. No. 3,673,676. This application Apr. 13, 1972, Ser. No. 243,702

Int. Cl. B05b *15/00*

U.S. Cl. 239—591 **8 Claims**



An improved tool assembly includes a ferroalloy support having an opening formed therein, a ceramic tool element positioned in the opening, and a filler metal containing finely divided refractory hard metal brazed to the support and mechanically bonded to the tool element.

3,776,473

HIGHLY REFLECTIVE ALUMINUM FLAKE

James T. Casey, Newfoundland, and Frank A. Badia, Ringwood, both of N.J., assignors to The International Nickel Company, Inc., New York, N.Y.

Filed Mar. 27, 1972, Ser. No. 238,375

Int. Cl. B02c *17/00*

U.S. Cl. 241—15 **7 Claims**

Aluminum flake powder having high specular reflectivity is produced by wet ball milling aluminum powder in the presence of a lubricant using a volume ratio of grinding balls to powder of at least 15:1 and a volume ratio of grinding balls

to milling liquid (e.g., a light liquid hydrocarbon) which preferably is substantially equal.

3,776,474

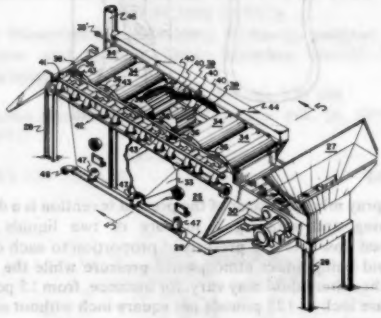
CONTROLLED ATMOSPHERE-SOLID WASTE DISPOSAL SYSTEM

Joseph Bassick, P.O. Box 11, Wallace, Idaho

Filed Oct. 29, 1971, Ser. No. 193,714

Int. Cl. B02c *21/00*

U.S. Cl. 241—23 **2 Claims**



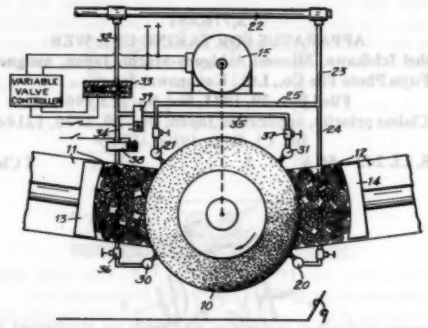
The method of this invention comprises the steps of sorting processable and nonpocessable materials from waste materials, sorting ferrous materials from processable materials, shredding processable materials, evaporating and dehydrating processable materials at substantially high temperatures while avoiding burning or incineration of the materials, and pulverizing or grinding the materials into a spreadable grain-size fertilizer and soil conditioner product. The apparatus includes a primary sorting table, a magnetic sorting means for ferrous materials, a material shredder, a substantially high-temperature, enclosed, controlled atmosphere evaporator-dehydrator, and a mixer-grinder.

3,776,475

AUTOMATIC PULP GRINDER CONTROL

James H. Perry, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed July 17, 1972, Ser. No. 272,360
Int. Cl. B02c *23/00*
U.S. Cl. 241—33 3 Claims



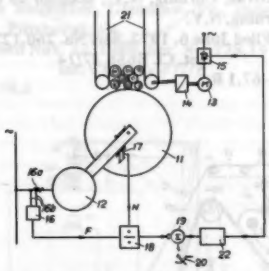
An automatic water shower flow control for a paper pulp grinding machine for control of pulp quality wherein the shower flow is regulated in accordance with the power input to the pulp grinding means.

3,776,476

CONTROL MEANS FOR GRINDING MACHINES

Henry Sandblom, and Vilmos Torok, both of Vasteras, Sweden, assignors to Allmanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Sept. 9, 1971, Ser. No. 179,011
Claims priority, application Sweden, Sept. 10, 1970, 12296/70
Int. Cl. B02c *25/00*
U.S. Cl. 241—34 3 Claims



Grinding mills for wood wherein the wood is fed to a grinding stone require regulation to produce pulp of good quality. A signal measuring the friction coefficient between the wood and grinding stone is derived and this signal controls the wood feeding to keep the friction coefficient constant.

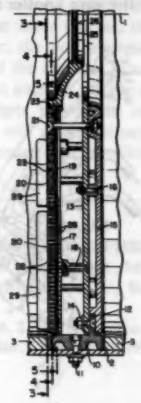
3,776,477

SANDWICH DIAPHRAGM FOR MILL

Claus M. Hansen, and Ejvind N. Norgaard, both of Copenhagen-Volby, Denmark, assignors to F. L. Smidth & Co., Cresskill, N.J.

Filed Jan. 5, 1972, Ser. No. 215,475
Claims priority, application Great Britain, Jan. 15, 1971, 2,123/71
Int. Cl. B02c *17/02*
U.S. Cl. 241—72 12 Claims

A diaphragm in the form of a composite sieving device for use in a rotary grinding mill containing loose grinding bodies for grinding solid materials is disclosed. The device comprises a sandwich structure which includes a plurality of plate-like members in intimate contact with one another. The plate-like members acting in combination prevent the passage of the grinding bodies and oversized particles of the material being ground from one section of the mill to another.

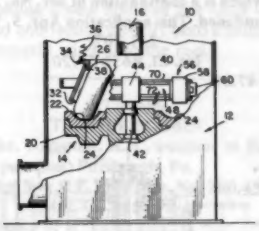


3,776,478

PULVERIZER WITH FIXED-ARM SPACER ASSEMBLY

Robert P. Gillette, Randolph Township, and Henry P. Kunz, Glen Ridge, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed May 4, 1971, Ser. No. 140,173
Int. Cl. B02c *15/00*
U.S. Cl. 241—103 3 Claims



Apparatus is provided for pulverizing raw coal feed stock into comminuted particles which can be conveyed to the combustion chamber of a furnace. A fixed arm spacer assembly is mounted on the pulverizer table such that the pulverizer rollers are separated from each other to prevent skidding.

3,776,479

METHOD OF AND DEVICE FOR DETECTING THE YARN END FROM A CROSSWOUND BOBBIN IN AUTOMATIC YARN WINDING MACHINES

Josef Lutovsky, Liberec, and Vladimir Prasil, Brno, both of Czechoslovakia, assignors to Elitex, Zavody Textilniho strojirenstvi generalni reditelstvi, Liberec, Czechoslovakia

Filed Feb. 24, 1971, Ser. No. 118,362
Claims priority, application Czechoslovakia, Feb. 26, 1970, 1311/70
Int. Cl. B65h *54/22*
U.S. Cl. 242—35.6 R 6 Claims

Method of and apparatus for preventing defects due to a failure in detecting the yarn end from a crosswound bobbin in

automatic yarn winding machines. By means of a stop motion detecting the presence of the end of yarn from the crosswound bobbin in the position after exit of said yarn end from a detecting tube, the end of yarn from a supply cop is prevented from being introduced into the yarn knotter in the case of absence

of the end of yarn from the crosswound bobbin. The introduction of the two ends of yarn into the yarn knotter is made possible in the case of presence of the end of yarn from the crosswound bobbin in the same cycle of the automatic procedure for removing the interruption of the winding process.

3,776,480

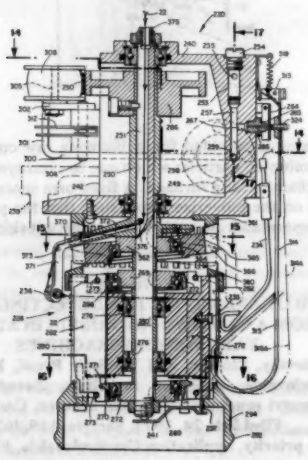
YARN HANDLING APPARATUS

John B. Lawson, Providence, R.I., assignor to Lawson-Hemphill, Inc., Central Falls, R.I.

Continuation-in-part of Ser. No. 138,749, April 29, 1971, abandoned, which is a continuation of Ser. No. 230,257, Feb. 29, 1972, abandoned. This application Apr. 5, 1972, Ser. No. 241,207

Int. Cl. B65h *51/20*

U.S. Cl. 242—47.01 **26 Claims**



A device for temporarily storing yarn for immediate use by a yarn consuming textile apparatus, such as a winder, a knitting machine, or for the filling thread of a shuttleless loom. The device includes a yarn collecting drum on which yarn from a supply source is wound temporarily and then removed under a controlled, uniform tension. The device eliminates the wide variations in yarn tension which occur when a yarn is delivered from a source, such as a cone or a package, and permits the yarn to feed to a textile machine at a substantially constant tension.

3,776,481

APPARATUS FOR TAKING UP A WEB

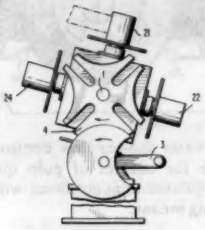
Kohei Ichikawa, Minami Ashigara-Machi, Japan, assignor to Fujia Photo File Co., Ltd., Kanagawa, Japan

Filed Dec. 29, 1971, Ser. No. 213,490

Claims priority, application Japan, Dec. 29, 1970, 121440

Int. Cl. B65h *19/06, 19/26*

U.S. Cl. 242—56 A **2 Claims**



Apparatus for taking up a web which has one rotary shaft, in turn a plurality of shafts for mounting the cores of the rotatably wound web extended radially in the perpendicular plane to the rotary shaft, and a device drives the shafts for mounting the cores so as to selectively rotate and stop them at equidistant circumferential positions.

3,776,482

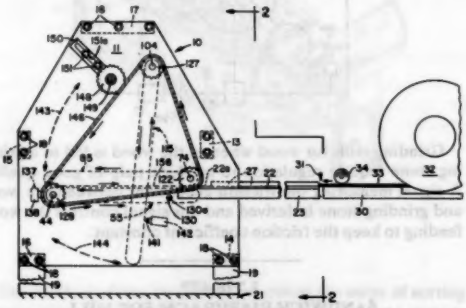
WINDING APPARATUS

Raymond J. Mras, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 6, 1972, Ser. No. 260,127

Int. Cl. B65h *17/14*

U.S. Cl. 242—67.1 R **10 Claims**



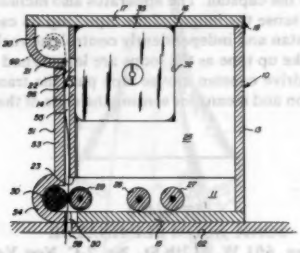
Apparatus for winding a flexible strip or length of material into a coreless spiraled roll and including three sets of belts which are driven in corresponding directions through associated loop paths of travel, two of the paths generally paralleling each other and the third path crossing the other two paths at a variable angle. The strip of material is fed into a variable size winding space or cavity defined by the belts, and driven movement of the belts roll, form or wind the strip of material into a coreless spiraled roll thereof.

3,776,483

RECEPTACLE FOR A ROLL, REEL OR CASSETTE OF PHOTOGRAPHIC FILM

George M. Reitter, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 25, 1972, Ser. No. 256,664
Int. Cl. G03b 23/04
U.S. Cl. 242—71.1 14 Claims



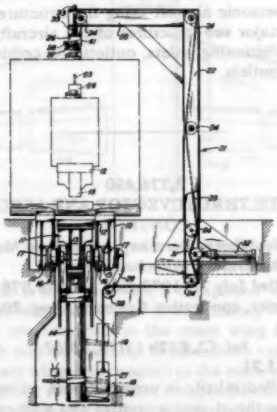
A receptacle or magazine comprises individual compartments in each of which a discrete strip of photographic film can be selectively positioned as a roll per se or as a roll contained by any one of a number of types of carriers. Each compartment receives a selected type of film in accordance with its carrier format. The film is dispersed through a withdrawal slot for introduction into processing apparatus when the receptacle is mounted thereon. The side of the casing containing the withdrawal slot is provided with mounting pins which permit the receptacle to be mounted relative to an entry slot for the processing apparatus. An indexing element on the processing apparatus is aligned with a scale on the receptacle to position the latter relative to the entry slot in accordance with the width of the film contained in the receptacle.

3,776,484

COIL CENTERING DEVICE

Charles Storer Shumaker, Glenshaw, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Nov. 22, 1968, Ser. No. 778,191
Int. Cl. B21c 47/16
U.S. Cl. 242—78.6 11 Claims



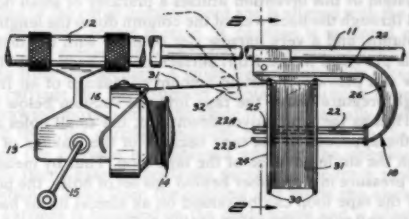
This invention relates to a centering device for use in connection with coils of strip material having varying diameters which, during the process of manufacture in a steel mill, are brought to a rolling mill or processing line for feeding into the mill or line. The invention disclosed comprises an elevator means adapted to support a coil and raise it in a vertical direction. Above the elevator there is provided a weighted element which is connected to a chain, the other end of the chain being connected to a second weighted element which is displaced by, and at the same rate as, the elevator. On movement of the elevator, the coil engaging element is lowered at the same rate that the elevator is raised so that when the coil engaging element engages the top of the coil, it produces a signal that interrupts movement of the elevator, which interrupted position will place the centers of the coils on a predetermined reference point, notwithstanding their varying diameters.

3,776,485

HOLDER FOR TRANSFERRING FISHING LINE TO REEL

Charles F. Foley, 3908 Merriam Rd., Minnetonka, Minn., and Charles D. McCarthy, Rt. No. 3, Box 217 BA, Wayzata, Minn.

Filed Sept. 2, 1971, Ser. No. 177,403
Int. Cl. A01k 47/06
U.S. Cl. 242—106 5 Claims



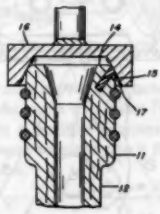
Afish line spool holder for attachment directly to a fishing rod and for holding a new spool of line from which the line can be removed and wound directly onto a fishing reel so that the line will properly wind onto the reel.

3,776,486

TEXTILE BOBBIN

Donald L. Blake, Campton, N.H., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Nov. 19, 1971, Ser. No. 200,455
Int. Cl. B65h 75/10
U.S. Cl. 242—118.3 2 Claims



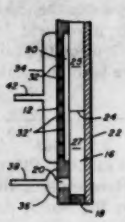
A textile bobbin for use in an automatic yarn winding apparatus wherein the butt of the bobbin includes wear resistant elements to substantially reduce wear on the butts when the bobbins are being rewound. The wear resistant elements are in the form of inserts that are mounted within the bobbins to present wear resistant surfaces positioned to reduce or prevent wear of the exterior surface of the bobbin butt.

3,776,487

VACUUM COLUMN FOR REEL SERVO

Joseph D. Henderson, Tulsa, Okla., assignor to Telex Computer Products, Inc., Tulsa, Okla.

Filed Oct. 26, 1971, Ser. No. 192,076
Int. Cl. G11b *15/58, 23/12*
U.S. Cl. 242—182 4 Claims



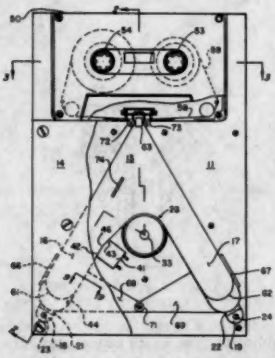
This invention describes an improved type of magnetic tape drive for computers in which a vacuum column is provided. A vacuum pulls the tape into the column, and the tape is pulled out by the capstan to the heads or, by the reel drive system. The system of this invention utilizes a plurality of small holes drilled through the back wall of the column down the length of the column, and a very narrow slot colinear with the drilled holes is provided in the front surface of the back wall. This narrow slot provides a certain amount of leakage of air from the high pressure above the tape into the vacuum below the tape. Thus as the tape moves downward, the small holes can sense the approach of the tape because of the leakage of air through the slit in advance of the tape loop. Thus by measuring air pressure in a chamber behind this set of holes, the position of the tape loop can be sensed on an almost linear basis, from one end to the other of the column. Servo means are provided to use this sensed position to continuously drive the reel motor.

3,776,488

TAPE APPARATUS

Alan M. Young, and Edwin Y. Webb, both of Los Gatos, Calif., assignors to Dicon Industries, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 56,431, July 20, 1970. This application May 10, 1971, Ser. No. 141,661
Int. Cl. G11b *15/06, 15/58, 23/12*
U.S. Cl. 242—183 19 Claims



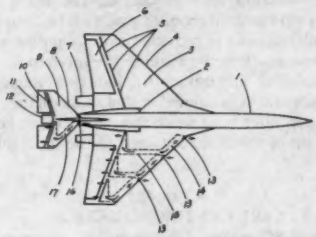
Tape apparatus adapted to operate with tape extending between tape reels which may be disposed in a cartridge or cassette. The apparatus includes a separate reel drive for driving each tape reel in either direction to supply or take up tape, a vacuum chamber adapted to receive a portion of the tape extending between the reels to form and support a low inertia tape loop, a capstan for driving the tape, and a transducer for recording and reproducing the information or data on the tape. The capstan and transducer are mounted along the wall of said chamber so that the tape loop extends past and has a portion on each side of the transducer and capstan whereby the tape can be rapidly moved in either direction past the transducer by the capstan. The apparatus also includes sensing means which sense the length of the tape loop on each side of the drive capstan and independently control the reel drives to supply and take up tape as the loops are lengthened and shortened as the drive capstan moves tape past the transducer in either direction and means for sensing the ends of the tape.

3,776,489

SONIC BOOM ELIMINATOR

Lian-Tong Wen, 601 W. 112th St., No. 7-C, New York, N.Y., and Myron Gould Beard, 6 Martin Pl., Manhasset, N.Y.

Continuation of Ser. No. 880,336, Nov. 26, 1969, abandoned. This application Jan. 7, 1972, Ser. No. 216,127
Int. Cl. B64c *21/02*
U.S. Cl. 244—1 N 6 Claims



A structure for eliminating sonic booms developed by the major sub-structures of a supersonic aircraft in accordance with the selective positioning of the exhaust gases of the aircraft, air inlets and outlets and conduits between the inlets and outlets. A supersonic aircraft using the structure is disclosed wherein the major sub-structures of the aircraft incorporate exhaust gas positioning, inlets, outlets and conduits between the inlets and outlets.

3,776,490

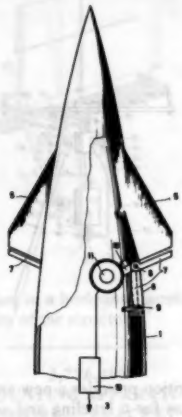
MISSILE WITH THRUST VECTOR AND AERODYNAMIC CONTROL

Dieter Weis, Neubiberg, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munchen, Germany

Filed July 28, 1972, Ser. No. 275,970
Claims priority, application Germany, Aug. 20, 1971, P 21 41 744.7
Int. Cl. F42b *13/32, 15/02*
U.S. Cl. 244—3.21 5 Claims

A jet propelled missile is provided with jet spoilers at its trailing end for thrust vector control and with other spoilers forwardly of its center of gravity for aerodynamic control. Both the jet spoilers and the other spoilers are operated from the same control device. The other spoilers are located adjacent the trailing ends of fins located on the forward end of the missile and can be displaced between an inoperative position recessed in the surface of the missile and an operative

position projecting outwardly from the outer surface of the missile. The side edges of the other spoilers which extend outwardly from the missile can be recessed for a portion of their length for increasing the efficiency of aerodynamic control.



3,776,491

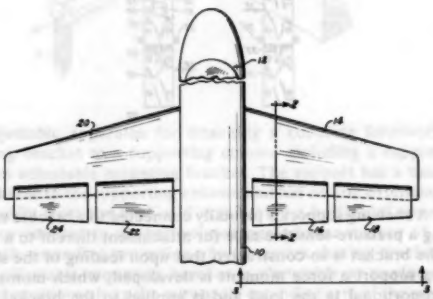
AIRCRAFT WITH COMPOUND WING

Robert F. Oulton, 1908 Sands Dr., Annapolis, Md.

Filed June 25, 1971, Ser. No. 156,798

Int. Cl. B64c 9/20

U.S. Cl. 244—42 CB **23 Claims**



An aircraft is provided with a compound wing which includes a main wing with one or more auxiliary wings. The auxiliary wings are attached to the main wing by positioning means which may be operated to selectively vary the location of the auxiliary wings with respect to the main wing thereby to vary the chord or the span of the compound wing. The auxiliary wing may also be located with respect to the main wing to provide a Venturi effect therebetween to increase the lift of the compound wing. An aircraft with compound wings has variable lift capability which lends versatility for various flight requirements. The compound wing effectively increases air safety and reduces noise, gas, smoke, and particle pollution around airports and enroute.

3,776,492

ON-BOARD CARGO LOADING DEVICE FOR AIRPLANES

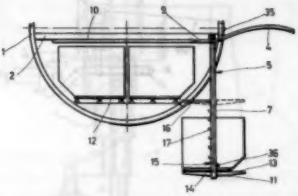
Kurt-Werner Iben, Ottobrunn, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH Gesellschaft mit beschrankter Haftung, Munchen, Germany

Filed Oct. 15, 1971, Ser. No. 189,694

Claims priority, application Germany, Oct. 23, 1970, P 20 52 192.0

Int. Cl. B64d 9/00

U.S. Cl. 244—137 R **13 Claims**



A cargo loading mechanism for use in the cargo compartment of aircraft having an opening in the side thereof providing access to the cargo compartment. A track is secured to the ceiling of the cargo compartment and is aligned with the opening providing access thereto. A carriage is mounted on the track for movement longitudinally therealong toward and away from the opening. A guide frame is pivotally secured to the carriage and has a support adapted to permit a depending downward movement of the guide frame externally of the aircraft from the carriage generally perpendicular to the track when the carriage is positioned adjacent the opening. The guide frame extends generally parallel to the track when it is positioned away from the opening and inside the aircraft. A lift carriage is mounted on the guide frame and is adapted to move between raised and lowered positions when the guide frame is positioned external of the aircraft.

3,776,493

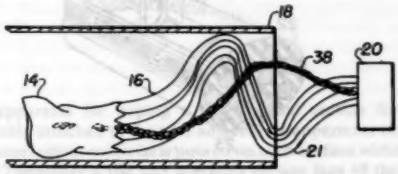
PARACHUTE DECOUPLING APPARATUS

Jon T. Matsuo, El Centro, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 11, 1972, Ser. No. 287,928

Int. Cl. B64d 17/62

U.S. Cl. 244—147 **3 Claims**



Decoupling apparatus is provided between a parachute and its deployment means, such as a pilot chute, that is actuated automatically and in a positive manner when the parachute has been deployed approximately to a full stretched-out condition prior to inflation.

3,776,494

ANTIVIBRATION SUPPORT FOR VIEWING GEAR

Alphonse Baucheron, Charenton, France, assignor to Tele-Pictures Establishment, Vaduz, Liechtenstein

Filed Apr. 10, 1972, Ser. No. 242,463

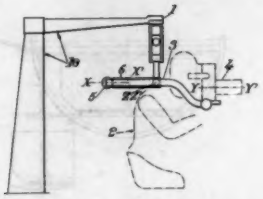
Claims priority, application France, Apr. 14, 1971, 7113201

Int. Cl. F16m 11/12

U.S. Cl. 248—18 **12 Claims**

The support is for viewing gear used aboard a vehicle and comprises means enabling its anchoring at a point situated

above the head of the operator of the viewing gear, and an arm balanced by counterweights and bearing the viewing gear. The arm is mounted to pivot around an axis, parallel to the optical axis of the viewing gear and borne by a bow-shaped element. The support has between the upper anchoring means and the bow-shaped element a cardan joint enabling angular variations of the pivot about the latter. The pivot bears a rotary element on which are hinged, by one of their ends, around



horizontal axes, two arms situated in a same vertical plane and between which a helicoidal spring is arranged. The arms bear at their free end around horizontal axes parallel to the preceding ones respectively the upper end of two vertical bars, on the other end of which are pivoted the ends of the bow element around horizontal axes situated in extension of one another and at right angles to the pivoting axes of the upper ends of the bars, the upper and lower pivots of each of the two bars being such that they enable angular variations.

3,776,495

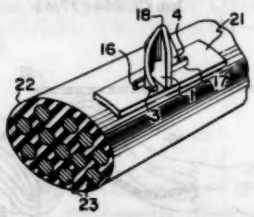
MOUNTING DEVICE

Marvin E. Hartz, Grosse Pointe Farms, and Roman J. Witek, Jr., Gibraltar, both of Mich., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed Nov. 9, 1971, Ser. No. 196,973

Int. Cl. F16b *15/00*

U.S. Cl. 248—71 **15 Claims**



A device for mounting an article such as a wire or bundle of wires on a support having an opening therein, the mounting device having a body of such size as to pass through the opening and a pair of flexible, substantially triangular flanges extending from opposite sides of the body and together having a length greater than the corresponding dimension of the opening so as to project beyond the latter, the flanges being flexible so as to permit them to pass through the opening. Each flange has two portions, one of which extends substantially normal to the body and the other of which extends substantially normal to the first portion, the two portions merging along a smoothly rounded curve. The body carries means for attaching it to the article to be supported and between the attaching means and the flanges is a deformable cushioning rib which cooperates with the flanges to provide a rattle-free mounting of the mounting device on the support.

3,776,496

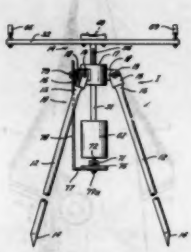
INSTRUMENT MOUNT

Clifton G. Reed, 1322 Canterlane, Houston, Tex.

Filed Jan. 26, 1972, Ser. No. 220,791

Int. Cl. F16m *11/14*

U.S. Cl. 248—182 **4 Claims**



The present invention provides a new and improved instrument mount such as for a leveling and sighting instrument, permitting improved leveling and sighting operations, particularly in windy and adverse weather conditions.

3,776,497

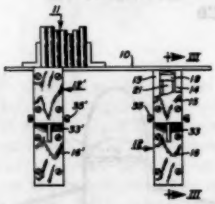
SHELVING SUPPORT

Bakari Mwanyoha, 51 Belmont Ct., Brockton, Mass.

Filed May 31, 1972, Ser. No. 258,245

Int. Cl. A47f *7/14*

U.S. Cl. 248—205 A **5 Claims**



A shelving support is pivotally connected to a bracket carrying a pressure-sensitive tape for attachment thereof to a wall. The bracket is so constructed that upon loading of the shelving support a force moment is developed, which moment is proportional to the load and is applied to the bracket in a direction to oppose the force normally tending to pull the bracket away from the wall.

3,776,498

STABILIZABLE SCAFFOLDING SUPPORT BRACKET

Allen Peters, 3855 Calavo Dr., Spring Valley, Calif., and William J. Ryan, 3661 Valley Rd., Bonita, Calif.

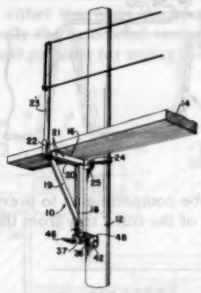
Filed Aug. 28, 1970, Ser. No. 67,814

Int. Cl. F16m *13/02*

U.S. Cl. 248—221 **1 Claim**

A bracket for supporting scaffolding or the like to a struc-

ture, such as pier piling, having a means for releasibly clamping the bracket to the structure, and a means for adjusting and



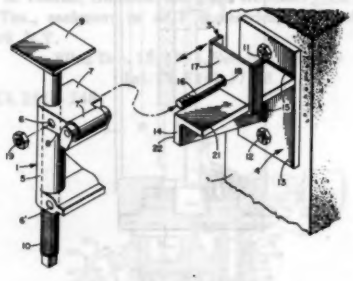
stabilizing the bracket in a horizontal position to compensate for the non-verticality of the structure.

3,776,499

ADJUSTABLE MOUNTING APPARATUS FOR COLUMN SHORING BRACKET

John S. Turner, Clearwater, and William A. Fremer, St. Petersburg, both of Fla., assignors to Strickland Chrobak, Inc., Jacksonville, Fla.

Filed Sept. 14, 1972, Ser. No. 289,096
Int. Cl. A47f 5/10; A47h 33/10; E04g 17/16
U.S. Cl. 248—298 **7 Claims**



Adjustable apparatus for attaching a concrete formwork shoring bracket to a supporting column including a support and an adjustable mounting bracket. The support has a base attachable to the supporting column and has an arm extending outwardly from the base said arm having a horizontal upper surface adapted to supportively engage a lower surface of a laterally extending projection of a formwork shoring bracket. The adjustable mounting bracket is clampable at predetermined positions along the outwardly extending arm of the support and has means for affixing the shoring bracket thereupon so that the combination of the adjustable mounting bracket and the formwork shoring bracket may be positioned at predetermined distances outwardly from the column.

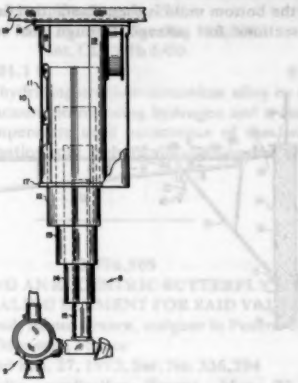
3,776,500

X-RAY APPARATUS HAVING A TELESCOPIC COLUMNAR SUPPORT

Anthony J. Foderaro, Middleburg Heights, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed July 16, 1971, Ser. No. 163,248
Int. Cl. A61b 19/00
U.S. Cl. 248—333 **10 Claims**

An X-ray apparatus including a telescopic columnar support comprising concentrically positioned tubular sections nested one within another. Each of the sections, except the innermost section, has a plurality of ways extending along its interior. Each of the sections, except the outermost section comprises a metallic extrusion which carries a plurality of



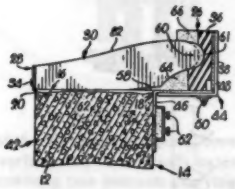
guide bearings on its exterior to cooperate with the ways. An adjustment means is associated with each of the guide bearings whereby the pre-load normal force between the nested and nesting sections may be adjusted.

3,776,501

APPARATUS FOR COPING A WALL

William E. Loftin, 8412 N.E. 53rd St., Kansas City, Mo.

Division of Ser. No. 810,641, March 26, 1969. This application July 8, 1971, Ser. No. 160,954
Int. Cl. B28b 7/06; E04g 11/36
U.S. Cl. 249—2 **2 Claims**



In apparatus for coping a wall, a dual section form is releasably attached to the wall adjacent its uppermost surface and cementitious material is poured on such surface within the form. Thereafter a tile bed is placed on one face of the wall against the form, the latter being utilized to support a reciprocable knife in order to trowel the tile bed into parallelism with the terminal edge of the overhanging nose of the coping. Removal of the form leaves a groove at the tile and its bed between the coping and the uppermost surface of the wall which is then caulked.

3,776,502

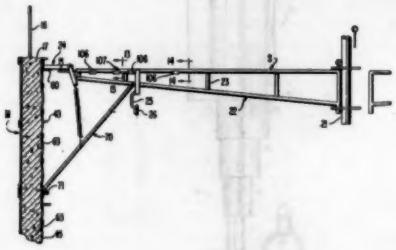
APPARATUS FOR CONSTRUCTING A MONOLITHIC SILO

Richard L. Weaver, Myerstown, Pa.

Division of Ser. No. 720,687, April 11, 1968, Pat. No. 3,619,431. This application July 6, 1971, Ser. No. 159,948
Int. Cl. E04g 11/22
U.S. Cl. 249—33 **2 Claims**

System for constructing concrete silos wherein molds are sequentially erected and filled as a three tiered mold unit with

a crane scaffold supported on the top mold by radial arms which rest on ledges extending inwardly from the inner face thereof. The outer form of the bottom mold is then dismantled into semi-circular sections, raised by using the three jib cranes of the crane scaffold and erected as the fourth tier. The inner form of the bottom mold is then dismantled in predetermined length sections for passage through the restricted space



between the crane scaffold and the third tier and then erected to complete the fourth tier mold. The crane scaffold is then elevated by suspending it from the top of the fourth tier; the radial arms are then seated on the horizontal ledges of the fourth tier. A cart is rotatably mounted about the center post of the scaffold for evenly feeding concrete into the molds. Safety means are provided.

3,776,503

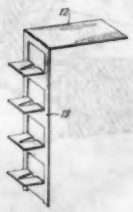
INGOT MOLD WITH HOT TOP HANGERS

Donald Boden, Pudsey, and Leslie Young, Darrington, both of England, assignors to Resil Processes Limited, Pontefract, Yorkshire, England

Filed Jan. 21, 1972, Ser. No. 219,756

Int. Cl. B22d 7/10; A47f 5/08

U.S. Cl. 249—106 **6 Claims**



Hangers for supporting tiles for hot top assembly comprising an element cranked or bent at one end for engagement with an edge of an ingot mould and having on the surface thereof a plurality of longitudinally spaced projections each adapted to engage with one or more corresponding recesses provided in an adjacent surface of the tile. The tile preferably has a row of recesses down the back thereof and the spacing of the recesses corresponds to the spacing of the projections on the tile.

3,776,504

SPILL-PROOF ICE CUBE TRAY

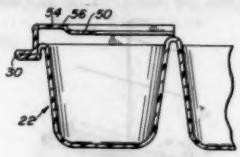
Robert L. Wiley, Lake Forest, Ill., assignor to Si Lite, Incorporation, Chicago, Ill.

Filed Mar. 6, 1972, Ser. No. 232,174

Int. Cl. F25c 1/24

U.S. Cl. 249—121 **3 Claims**

A unitary, one-piece assembly constituting an ice cube tray of plastic material and including captive, integrally formed cover means pivotal between selectable positions one of which exposes the compartmental container for ready filling and one



of which seals the cube compartments to prevent water spillage during transport of the filled tray from the filling site to the freezing unit.

3,776,505

VALVE

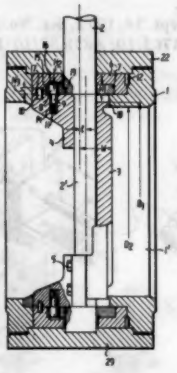
Sadayuki Nakanishi, Kobe, Japan, assignor to Kobe Steel, Ltd., Kobe, Japan

Filed Oct. 2, 1972, Ser. No. 297,992

Claims priority, application Japan, Sept. 30, 1971, 46/77224

Int. Cl. F16k 5/14

U.S. Cl. 251—163 **6 Claims**



A valve comprising a valve plate for closing a through fluid passageway which is first retracted from the valve seat and then rotated in order to open, a valve rod having an eccentric portion rotatably supporting the valve plate, a retraction guide pin for the valve plate engaging with the body of the valve to guide the valve plate during its retraction upon rotating the valve rod through a first portion, and a rotation guide pin to lock the valve plate with the valve rod only during a second portion of rotation of the valve rod for movement therewith.

3,776,506

VALVE STRUCTURE HAVING FLUID PRESSURE ACTUATED SEALING MEMBERS

James M. Fowler; Willard E. Kemp, and Jerry B. Tomlin, all of Houston, Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

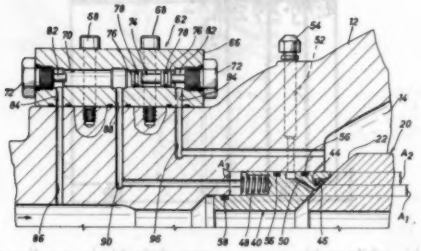
Filed Dec. 15, 1971, Ser. No. 208,100

Int. Cl. F16k 25/00

U.S. Cl. 251—172 **1 Claim**

A valve structure has a valve member mounted within a valve chamber and forms a body cavity between the valve member and the valve body. Upstream and downstream annular sealing members are mounted on opposed sides of the valve member for limited relative longitudinal movement and

are adapted to be urged against the valve member by fluid pressure. A separate valve control means for each sealing member is mounted on the exterior of the valve body and permits communication of the associated sealing member to fluid pressure from either the body cavity or the adjacent flow passage. Normally the associated sealing member is exposed to the higher fluid pressure for urging the sealing member into



tight sealing engagement with the valve member and if fluid leaks past the upstream sealing member into the body cavity, the downstream sealing member is urged into tight engagement with the valve member from the increase in body fluid pressure. The valve control means includes a pilot valve for each sealing member having a slidable shuttle for selectively communicating the several fluid conduits.

3,776,507

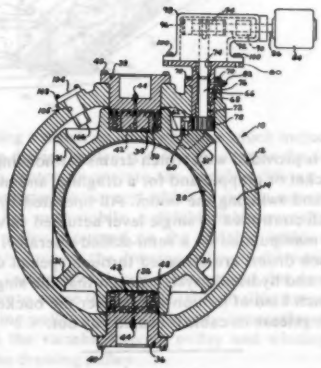
MEANS TO ROTATE SPHERICAL PLUG VALVE

Jerry B. Tomlin, Houston, and John Helenberg, La Porte, both of Tex., assignors to ACF Industries, Incorporated, New York, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,249

Int. Cl. F16k *31/53*

U.S. Cl. 251—248 **5 Claims**



A spherical plug valve structure includes a valve ball mounted on opposed trunnions and having an offset gear drive for rotation of the valve ball. The offset gear drive is mounted internally of the valve body and includes a segment gear mounted on the outer surface of the valve ball in offset relation to the axis of rotation. A pinion engages the segment gear and has a drive shaft extending through the valve body to a suitable external power drive source. The pinion and drive shaft are detachably connected to the valve body and may be easily removed. The trunnions on which the valve ball is mounted for rotation may also be easily removed.

3,776,508

PROCESS FOR MASSIVELY HYDRIDING ZIRCONIUM-URANIUM FUEL ELEMENTS

Norman H. Katz, Northridge, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 26, 1961, Ser. No. 113,036

Int. Cl. C01b *6/00*

U.S. Cl. 252—301.1 R **6 Claims**

A method of hydriding uranium-zirconium alloy by heating the alloy in a vacuum, introducing hydrogen and maintaining an elevated temperature until occurrence of the beta-delta phase transformation and isobarically cooling the composition.

3,776,509

VALVE HAVING AN ECCENTRIC BUTTERFLY MEMBER AND SEALING ELEMENT FOR SAID VALVE

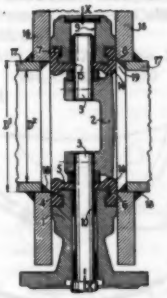
Christian Leblond, Atton, France, assignor to Pont-A-Mousson S.A., Pont-A-Mousson, France

Filed Feb. 27, 1973, Ser. No. 336,294

Claims priority, application France, Mar. 22, 1972, 7209970

Int. Cl. F16k *1/226*

U.S. Cl. 251—306 **4 Claims**



A valve of the type having an axial bore and an annular radial bearing surface and two radially extending bearings in the body for receiving two journals carrying a butterfly member which is eccentric relative to the journals. A sealing element is disposed in the bore and has a cylindrical sleeve portion and, at one end, an outer radial bearing surface for bearing against the valve body and a beading which extends radially inwardly against which the butterfly member bears in the closing position and, in the middle of the sealing element, two diametrally opposed coaxial passageways for the journals. The distance between the axis of the passageways and the bearing surface of the sealing element in the free state of the sealing element exceeds the distance between the axis of the bearings and the bearing surface of the valve body and the diameter of the passageways of the sealing element in the free state of the sealing element is less than the diameter of the journals.

3,776,510

SIMPLIFIED VALVE ASSEMBLY

Leonard R. Beck, 3602 Meadow Dr., Rolling Meadows, Ill.

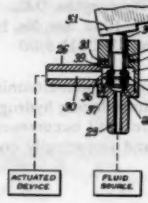
Filed June 1, 1972, Ser. No. 258,868

Int. Cl. F16k *43/00*

U.S. Cl. 251—333 **1 Claim**

A mounting plate has a clip which holds a valve body and a spring body in spaced positions against the plate. A plunger in the spring body urges an operating lever in a direction such as to bear against the valve stem extending from the valve body.

A valve closure is formed by two O-rings on the opposite side of a pressure plate. The valve closure is movable between a



position at which one O-ring blocks an air inlet and a second position at which the other O-ring forms a seal about the valve stem.

3,776,511

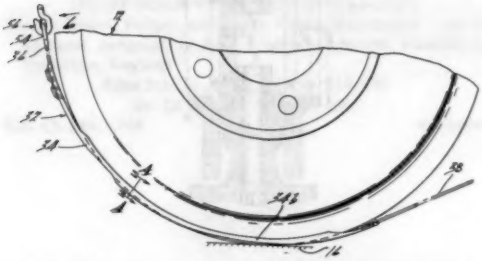
SPARE TIRE HOIST

John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich.

Filed June 26, 1972, Ser. No. 266,061

Int. Cl. B66f 1/00; B66d 1/00

U.S. Cl. 254—1 **8 Claims**



A self-supporting sling-type spare tire hoist for removing a spare tire from a vehicle stowage well. The spare tire is stowed in a generally upright position in the well with the hoist underlying the tire. One end of the hoist is connected to the vehicle while the other end has a handle which by virtue of the self-supporting structure of the hoist, is disposed in a position where it may be readily grasped by the hoist operator. When the user pulls the handle outwardly of the stowage well, the hoist cradles the tire, slinging it out of the well.

3,776,512

APPARATUS FOR STIRRING GRAIN

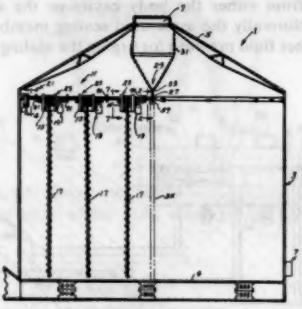
Richard E. McKinnon, Taylorville, Ill., assignor to Specialized Products, Inc., Taylorville, Ill.

Continuation of Ser. No. 889,469, Dec. 31, 1969, abandoned. This application June 3, 1971, Ser. No. 149,777

Int. Cl. B01f 7/00

U.S. Cl. 259—102 **19 Claims**

Apparatus for stirring a mass of grain in a storage bin for aerating the grain to dry it and for blending the grain for controlling moisture variation in the grain throughout the mass from bottom to top, having a plurality of vertical augers rotatable on their axes for moving grain upward, these augers moving radially outward relative to the central vertical axis of



the bin while making a sweep around the bin in one direction, and radially inward on a successive sweep around the bin in the opposite direction.

3,776,513

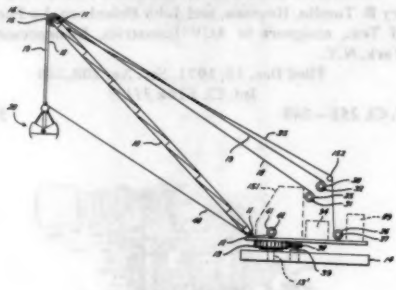
CRANE

Fred E. Mosley, P.O. Box 1552, Waco, Tex.

Filed May 10, 1971, Ser. No. 141,473

Int. Cl. B66d 1/24

U.S. Cl. 254—150 FH **5 Claims**



A crane is provided with winch drums for hoisting and closing the bucket or grapple and for a dragline, and mechanisms for lifting and swinging the boom. All operated by hydraulic motors each controlled by single lever actuated valves so as to be readily manipulated by a semi-skilled operator. The mentioned winch drums are powered through special differential gear trains and hydraulic systems such that the single control lever for each kind of motion may power the bucket in either direction or release its cable for rapid pay out.

3,776,514

OVERLOAD REGULATOR FOR LEVER HOISTS

Cecil Howard Eggleton, Jr., Fruitport, and William Franklin Henry, Muskegon, both of Mich., assignors to Dresser Industries, Inc., Dallas, Tex.

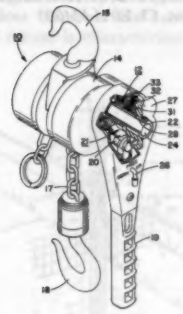
Filed Apr. 28, 1971, Ser. No. 138,072

Int. Cl. B66d 3/14

U.S. Cl. 254—167 **20 Claims**

A regulator to limit the raising, pulling, or stretching load capacity of a lever type hoist to a predetermined maximum. The regulator is operably mounted between the drive input applied via an operating lever and the output drive on which a load is received and/or contained. An adjustably presettable braking friction applied between coaxially interfit components

rotationally connects the input and output drives. In the event the input driving force exceeds the imposed braking friction,



the hoist is rendered inoperable to raise, pull or stretch the load but continues operable to lower or release the load.

3,776,515

WINCH FOR SNOWMOBILES

Julien Bergeron, 4075 rue Rouleau, Sherbrooke, Quebec, Canada

Filed Feb. 2, 1972, Ser. No. 222,921

Int. Cl. B66d *1/18, 3/02*

U.S. Cl. 254—166 **8 Claims**

Mounting a winch on a snowmobile which includes a frame, a variable driving pulley, a rotatable cam on the variable pulley and a motor to operate the variable driving pulley. The winch comprises a support which is rigidly connected to the frame of the snowmobile, a slidable table over the support, a drawing pulley mounted on the slidable table, a clutch to operatively connect the drawing pulley to the variable driving pulley, a cable which is windable around the drawing pulley and means to cause the slidable table to slide towards the variable driving pulley while operatively connecting the drawing pulley to the variable driving pulley and winding the cable around the drawing pulley.

3,776,516

APPARATUS FOR FACILITATING THE PASSAGE OF RIGID CONNECTORS COUPLING FLEXIBLE ELEMENTS AROUND A ROTARY MEMBER

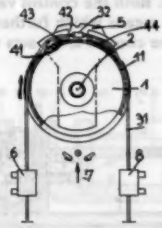
Edmond Daniel, Saulx-les-Chartreux, France, assignor to Societe Creusof-Loire, Paris, France

Filed Dec. 8, 1972, Ser. No. 313,474

Int. Cl. B66d *1/36*

U.S. Cl. 254—190 R **10 Claims**

A device adapted to be associated with a rotary member, e.g. a pulley or drum, for assisting the passage therearound of rigid connectors coupling flexible elements of a flexible member, e.g. a belt, cable, etc., comprises a pair of shoe elements defining therebetween a recess to receive a connector, the shoe being normally positioned out of the path of the flexible member and being movable, on detection of the arrival of



a connector at the rotary member to a position between the rotary member periphery and flexible member with the connector positioned in the recess, the shoe being coupled to rotate with the rotary member closing the passage of the connector therearound.

3,776,517

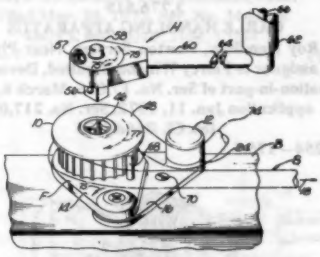
WINCH FOR USE ON SAILBOATS

Richard L. Davis, 3926 Bledsoe Ave., Los Angeles, Calif., and Jerome K. Wolfram, Torrance, Calif., assignors to said Davis, by said Wolfram

Filed Apr. 3, 1972, Ser. No. 240,498

Int. Cl. B66d *1/30*

U.S. Cl. 254—150 R **8 Claims**



A winch is disclosed including a flat base plate for supporting an upright cylindrical idler along with a flat pivot arm which in turn carries a ratchet drum. As supported, a halyard, sheet, or the like, passes less than a full turn about the drum in a relationship such that the tension in the halyard applies a force to the drum, clampingly engaging the sheet between the drum and the idler. An extension pin adjacent the drum prevents fouling and a handle (incorporating a ratchet) engages the drum to actuate the drum and the pivotal mounting so as to accomplish various operations.

3,776,518

WINCH AND CONTROL MEANS THEREFOR

Wallace J. Witwer, Cedar Rapids, Iowa, assignor to Harnischfeger Corporation, Milwaukee, Wis.

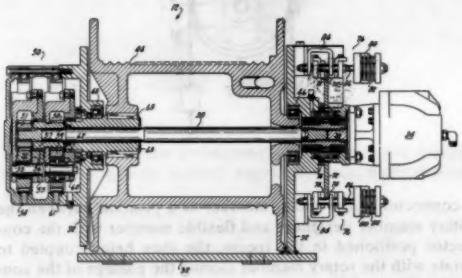
Filed Feb. 24, 1972, Ser. No. 229,056

Int. Cl. B66d *1/30*

U.S. Cl. 254—150 FH **8 Claims**

A winch for use on a mobile crane to hoist or lower a load comprises a hydraulic winch motor, a shaft driven thereby, a winch drum, and planetary gearing through which the shaft

drives the drum. A three-position hydraulic control valve controls motor speed and direction of rotation. The winch further comprises a brake disc connected by a uni-directional clutch to the shaft and spring-applied, hydraulic brake cylinder-released brake pads for frictional engagement with the brake disc. A two-position hydraulic brake valve controls operation of the brake cylinder. Both the control valve and brake valve are part of a control means which further includes a control lever and linkage. The control lever acts through the linkage



and is movable from a neutral position (wherein both valves are closed) toward a winch-lower position (wherein the brake valve opens before the control valve) and toward a winch hoist position (wherein the brake valve remains closed but the control valve opens). During lowering, the winch drum starts rotating smoothly as the brake is released and the load begins to descend under the force of gravity before lowering power is applied to the winch motor. During a winch-hoist operation, the uni-directional clutch allows winch drum rotation even though the brake is still applied.

3,776,519

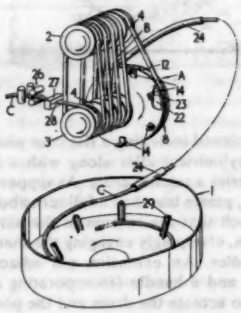
CABLE HANDLING APPARATUS

William Roy Hamilton, Newton Ferrers, Near Plymouth, England, assignor to Fairey Winches Limited, Devon, England

Continuation-in-part of Ser. No. 17,066, March 6, 1970. This application Jan. 11, 1972, Ser. No. 217,021

Int. Cl. B66d *1/76*

U.S. Cl. 254—175.5 **14 Claims**



The winch includes two spaced, parallel, circumferentially-grooved driven drums, a rotary cable-driving member defining an annular groove, and rollers, gripping elements or other means for retaining a cable in the groove. The drums and driving member are rotated from a source of rotary power. During drawing-in, the cable passes through a guide, around successive drums in successive grooves thereof, around part of the annular groove of the driving member, and then through a guide conduit into a storage space. The cable is under tension as it passes from the final drum groove to the annular groove defined by the driving member.

3,776,520

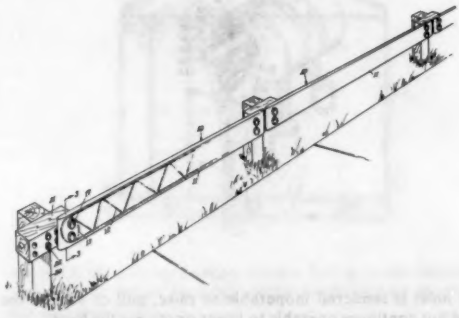
ENERGY ABSORBING HIGHWAY GUARDRAIL

James Charles, and Robert L. Akens, both of Zanesville, Ohio, assignors to J. P. C., Inc., Zanesville, Ohio

Filed Nov. 6, 1972, Ser. No. 303,998

Int. Cl. E01f *15/00*

U.S. Cl. 256—13.1 **5 Claims**



A maintenance-free guardrail for use on highways or similar use with a built-in and predictable failure rate. It is formed of a body of thermoplastic resin material, which is noncorrosive and sunlight resistant, and which has a steel rod insert embedded therein, the insert being of predetermined geometry to produce a controlled failure pattern when the guardrail is subjected to sufficient impact.

3,776,521

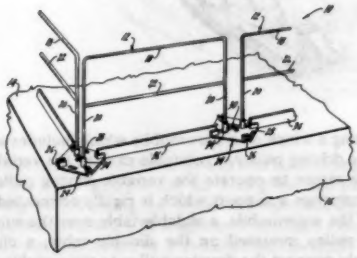
PORTABLE SAFETY RAILING

Robert S. Weinert, 419 Park St., Manitowoc, Wis.

Filed Mar. 27, 1972, Ser. No. 238,444

Int. Cl. E04h *17/16*

U.S. Cl. 256—24 **9 Claims**



A portable safety railing includes one or more horizontal bars supported at either end by vertical posts. The posts are positioned in weighted bases having sockets for receiving the posts and slots for receiving the slab-like toe rail.

3,776,522

FENCE POST CONSTRUCTION

William W. Bartlett, R.D. 2, New Albany Township, Pa.

Filed May 15, 1972, Ser. No. 253,554

Int. Cl. E04h *17/20*

U.S. Cl. 256—47 **9 Claims**

A vertically elongated hollow one-piece fence post made from moldable plastic material to render it weatherproof and otherwise appropriate for fence erecting purposes and embodying forwardly converging side walls having rearward longitudinal edges united by a back wall. The adjoined forward

edges of the side walls provide a rigid vertical corner. The vertex of the corner and adjacent portions of the side walls are provided with individual selectively usable wire hitching and fastening means for fencing wires, for example, plain wires, barbed wires, hog and sheep and poultry wires. No staples, nails or equivalent fasteners are necessary for installation. Each individual means is characterized by a V-shaped main

slot embodying a wire inserting crotch portion which opens through the accessible portion of the vertex and downwardly inclined wire piloting branches having rearward terminal ends. The extreme ends of the branches are communicatively joined to median portions of vertically disposed wire seating and retaining slots which are auxiliary but complemental to the main V-shaped slot.

3,776,523

STRUCTURAL TUBE ASSEMBLY

Edward E. Weiland, Union Lake, Mich., assignor to Universal Fence Inc., Highland, Mich.

Continuation-in-part of Ser. No. 120,107, March 2, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,253

Int. Cl. E04h *17/14*

U.S. Cl. 256—73 **13 Claims**

Disclosed herein is a structural tubing assembly such as a fence or gate in which one tubular member is joined to a second tubular member by (1) cutting an elongated opening in the second member, (2) cutting opposing slots in the end of the first member thus forming two locking tabs, (3) inserting the tabs through the opening in the second member, and (4) spreading the tabs, thus securely and rigidly locking the first tubular member to the second tubular member. Preferably, the end of the first tubular member is partially flattened to conform to the shape of the elongated opening in the second member prior to cutting the two opposing slots to form the locking tabs. Optionally, a reinforcing insert such as a tube of proper size is pressed into the opening between the spread tabs to strengthen the connection.

3,776,524

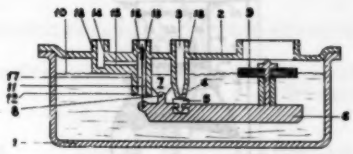
WATER PURIFICATION

Richard A. Starke, 37, 4th Ave. Parktown North, Johannesburg, Republic of South Africa

Filed Dec. 14, 1971, Ser. No. 207,904

Int. Cl. B01f *15/04*

U.S. Cl. 259—4 **3 Claims**



A mixing chamber particularly useful in mixing gaseous chlorine with water, the chamber having a float controlled inlet and an outlet dipping below the water level established by the float controlled valve and having at a position above the water level an orifice and a chlorine gas inlet between the orifice and water level, the orifice being such as to limit the negative pressure in the chlorine gas inlet when water passes through the orifice under suction applied to the outlet.

3,776,525

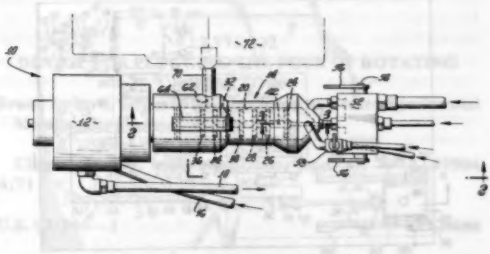
INJECTION PROCESS

James Warner, 2732 Hallister Ter., Glendale, Calif.

Filed Mar. 26, 1973, Ser. No. 344,860

Int. Cl. B01f *3/10, 5/04, 15/04*

U.S. Cl. 259—7 **11 Claims**



A method of injecting a plural component synthetic resin into a site where pressure and other conditions vary. A very high viscosity non-Newtonian fluid and a relatively low viscosity fluid are accurately metered in a proportioning pump system so that a small amount of the thin fluid and a large amount of the viscous fluid are supplied simultaneously to a blending device. Heat generating conditions of viscous shear are utilized in the blending device so that there is a substantial reduction in pressure across the blending device and a substantial elevation in temperature due to the internal heat generated by the viscous shear. The pressure on the resultant admixture is measured at the injection site, and the rate of fluid flow is adjusted to maintain that pressure at an approximate predetermined value. Injection is carried out at a predetermined elevated temperature. A substantial proportion of the heat required to elevate the temperature to the desired value is generated by viscous shear within the viscous component.

3,776,526

SPLASH-PROOF VIBRATORY APPARATUS

William A. Fazioli, Troy, N.Y., assignor to Norton Company, Troy, N.Y.

Filed Aug. 10, 1972, Ser. No. 279,674
Int. Cl. B01f 11/02
U.S. Cl. 259—72 6 Claims

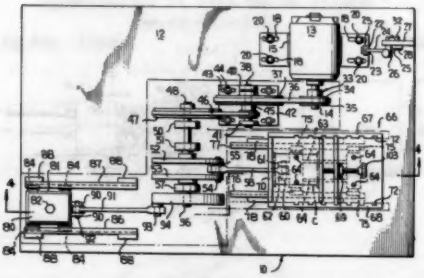
A vibratory container, primarily for use in an electrolytic process, capable of operating with high electrolyte levels and of being loaded or emptied of workpieces with the unit in motion without splash-out of the electrolyte wherein at least one flexible closure member, closes off any avenues of splash-out from the unit.

3,776,527

SIMULATION EVALUATION METHOD

Paul F. Cover, and Clyde F. Kemper, both of Westminster, Md., assignors to The United Company, Westminster, Md.

Filed Jan. 25, 1971, Ser. No. 109,262
Int. Cl. B01f 13/00
U.S. Cl. 259—91 7 Claims



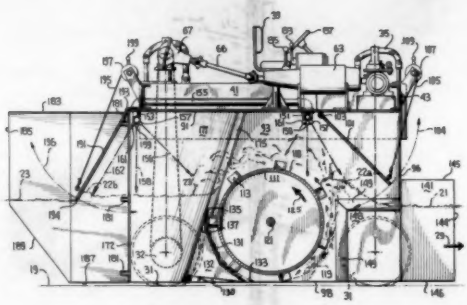
This disclosure relates to a method of simulating the operation of a commercial can shaker by employing a test shaker and evaluating the results in a repetitious manner until a desired product is observed thereby automatically making a selection of the proper commercial shaker to obtain the desired product commercially, continually and repetitiously. The method includes the steps of selecting from known performance characteristics of existing commercial shakers a predetermined shake time and rate for a particular container size, setting the test shaker to function at the preselected rate, shaking a filled container of the particular size in the test shaker for the predetermined time, observing the results of the shaking on the product, and as necessary repeating these steps using different time and shake rates until the desired result or product effect is observed.

3,776,528

VEHICULAR COMPOSTING MACHINE AND METHOD FOR AEROBICALLY DECOMPOSING WASTE MATERIALS

Louis R. Toto, Penn Green Rd. 2 mi. S. of Avondale, Landenberg, Pa.

Filed Apr. 5, 1972, Ser. No. 241,129
Int. Cl. B01f 7/04
U.S. Cl. 259—183 35 Claims



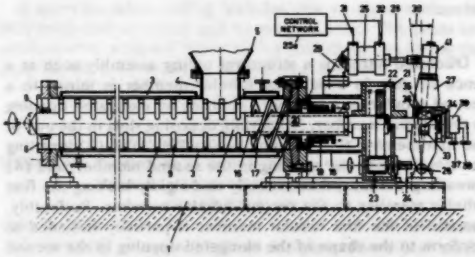
A method and apparatus for mixing non-flowable solid materials disposed stripwise on a flat surface and for periodically aerating, hydrating, and shaping aerobically decomposable waste materials into a rick having compressed sides and a nearly square cross section. The apparatus includes a straddle-carrier vehicle having a tunnel means thereunder and a beater means and a scavenger means therewithin. Revolving paddles liftingly scoop clumps of waste material from one end of the rick and sling portions thereof upwardly against a forwardly and downwardly inclined front deflecting surface as an auxiliary fragmentation means and other portions upwardly and rearwardly against a rearwardly and downwardly inclined rear baffle surface from which the material is reflected downwardly between shaping compressors at the discharge end thereof to form an aerated rick which is leveled by the baffle surface.

3,776,529

PROCESS FOR THE DOSABLE CONVEYING OF MATERIALS AND DEVICE FOR CARRYING OUT THE PROCESS

Fritz Sutter, and Fritz Ronner, both of Pratteln, Switzerland, assignors to Buss Ltd., Basle, Switzerland

Filed Aug. 30, 1971, Ser. No. 176,112
Claims priority, application Switzerland, Sept. 1, 1970, 13131/70
Int. Cl. B01f 7/04; B29b 1/06; B01f 11/00
U.S. Cl. 259—185 7 Claims



A process and apparatus for conveying and dispensing in uniform volumetric doses particulate or highly viscous materi-

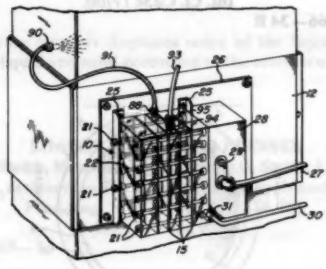
als by rotating and axially reciprocating a shaft, having radially extending paddles, within a cylindrical casing. The forward stroke of the shaft is faster than the backward stroke resulting in a net flow producing a dosable conveyance of the material through the casing. Baffles extending inwardly from the casing cooperate with the paddles to agitate and knead the material and to clean the shaft and paddles during operation.

3,776,530

ELECTRODIALYTIC DEMINERALIZING UNIT FOR HUMIDIFICATION PURPOSES

Jerry L. Griffith, and Donald D. Kinsworthy, both of Dayton, Ohio, assignors to Lau Incorporated, Dayton, Ohio

Filed Mar. 25, 1971, Ser. No. 127,990
Int. Cl. B01f *3/04*
U.S. Cl. 261—4 **1 Claim**



The unit includes at least one electrodialytic "half-cell" in which a single cation-selective membrane separates the cell into a product flow chamber and a purge flow chamber and in which an anode is disposed in the product flow chamber and a cathode is disposed in purge flow chamber. Tap water is demineralized when a electric potential is established between the electrodes which pulls the cation constituents of lime, principally calcium, magnesium and manganese, out of the product flow chamber through the cation-selective membrane and into the purge flow chamber. In the preferred embodiment, the demineralized product is delivered to a nozzle in the air plenum of a furnace for atomization and humidification of hot air passing therethrough.

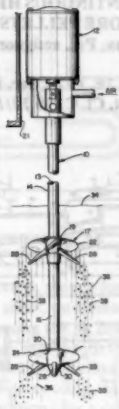
3,776,531

APPARATUS AND PROPELLER FOR ENTRAINING FLUIDS IN LIQUIDS

George A. Ebner, and Marjorie J. Ebner, both of 1405 S. Hillcrest Dr., Fort Collins, Colo.

Continuation-in-part of Ser. No. 1,523, Jan. 8, 1970, abandoned. This application Mar. 16, 1972, Ser. No. 235,288
Int. Cl. B01f *3/04*
U.S. Cl. 261—87 **9 Claims**

Apparatus and propeller for dispersing and entraining a fluid, particularly a gas, in a liquid. The apparatus includes a propeller shaft mounted for rotation, said shaft being closed at one end and having a channel therein communicating at the other end with the fluid to be dispersed, means for rotating the shaft, at least one series of diametrically aligned screw-propeller blades equidistantly spaced around said shaft extending radially from said shaft, and a plurality of diametrically aligned aspirator tubes disposed proximately to said blades equidistantly spaced around said shaft, each of said tubes having a free end disposed generally radially outwardly at least as far as the outer portions of said blades, each of said tubes having a generally longitudinally extending opening formed therethrough, each of said openings being disposed in fluid communication with said channel, and each of said tubes being mounted on said shaft to form an included angle between the longitudinal axis of the opening adjacent the free end thereof and the longitudinal axis of the shaft of not less than 35° nor more than 75°. Each of the tubes is also mounted on said shaft to form an included angle between the longitudinal axis of the opening adjacent the free end thereof and a radially extending plane having the longitudinal axis of said shaft lying therein of not less than one-half degree nor more than 3°. The method of dispersing and entraining fluids in a liquid comprises generating a columnated current of liquid



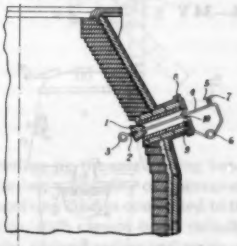
within a body of liquid, creating one or more zones of reduced pressure in the body of liquid adjacent the outer periphery of said columnated current of liquid and rotating said zone or zones about the outer periphery of said columnated current of liquid, introducing a fluid into said body of liquid adjacent the outer periphery of said columnated current of liquid and forming minute globules or bubbles of fluid adjacent the outer periphery of said columnated current of liquid, and entraining said globules or bubbles of fluid within said columnated current of liquid.

3,776,532

DEVICE FOR PLUGGING THE POUR OF ROTATING REACTORS

Bruno Imberti, Genova, Italy, assignor to Centro Sperimental Metallurgico S.p.A., Rome, Italy

Filed Apr. 4, 1972, Ser. No. 240,379
Claims priority, application Italy, Apr. 17, 1971, 49804 A/71
Int. Cl. C21b
U.S. Cl. 266—1 **12 Claims**



A device for plugging the taphole of reactors for metallurgical processes, of rotating and/or oscillating type; comprising in combination a plug having an essentially frusto-conical shape;

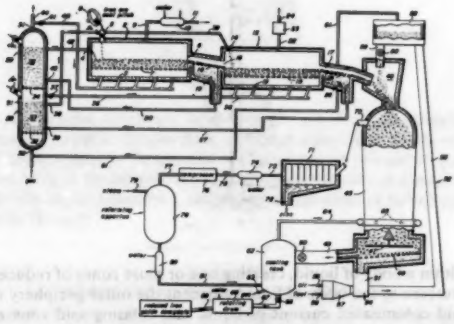
a tail piece, fixed to the greater base of the plug and substantially perpendicular thereto, having its free end folded in order to allow the plug to be operated; a rod rigid with, and perpendicular to, the minor base of the plug, the free end of which is so shaped as to allow its anchoring to the locking member of the plug; a member for locking the plug on the taphole located on the outer edge of the hole itself and co-operating with the end of said rod, said member being easily removable and apt to be reused.

3,776,533

APPARATUS FOR CONTINUOUS HEAT PROCESSING OF ORE PELLETS

Joseph Vinaty, Aliquippa, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Filed Jan. 28, 1970, Ser. No. 6,433
Int. Cl. C21b *13/14*
U.S. Cl. 266—24 **9 Claims**



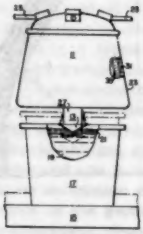
Apparatus and method for preheating, hardening and reducing ore pellets that provide for envelopment of the pellets in inert particulate material throughout the processing. Green pellets are continuously charged into a fluidized bed of heated particulate material and preheated while being buoyantly moved to a second fluidized bed. The preheated pellets are then buoyantly transported through the second fluidized bed of particulate material, which is at a higher temperature than the first bed, while being hardened. Hardened pellets are directly discharged from the second bed to the upper region of a columnar reactor for random envelopment within a bed of inert particulate material that is heated to a temperature sufficient to reduce the pellets during downward movement through the reactor.

3,776,534

DEGASSING OF SLAG COATED MELT

Robert E. Cashdollar, Sr., R.D. No. 7, Butler, Pa.

Filed May 17, 1972, Ser. No. 254,162
Int. Cl. C21c *7/10*
U.S. Cl. 266—34 V **6 Claims**



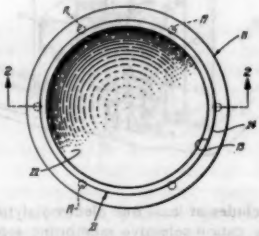
There is disclosed a degassing process and degassing apparatus incorporating a slag-breaker which instead of being an integral welded unit is formed of several parts which are readily stored and readily transported and are secured together by fasteners at the site of use. The slag-breaker includes a tapered member in the form of a conical receptacle and a top for this member. The slag-breaker is assembled near the degassing vessel, the top being secured substantially below the rim of the member. The slag-breaker is secured to the gas entrance or snorkel of the vessel with the rim of the tapered member above the opening in the snorkel.

3,776,535

METHOD FOR EVAPORATING ALUMINUM

Vernon C. Spellman, Santa Rosa, Calif., assignor to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 29,410, April 17, 1970, Pat. No. 3,684,268. This application Mar. 13, 1972, Ser. No. 233,936
Int. Cl. C23c *17/00*
U.S. Cl. 266—34 R **2 Claims**



Method for evaporating aluminum utilizing a carbon liner having a recess therein by depositing the aluminum in the recess and then heating the aluminum in the recess in a location generally at the center of the recess. The outer margin of the liner is cooled to a greater extent than the inner portion of the liner so that the outer margin of the liner is cooler whereby the outer edge of the aluminum in the recess will be cooled to such an extent that the outer margin is not molten so that the aluminum will not creep over the edge of the liner.

ERRATUM

For Class 266—38 see:
Patent No. 3,776,439

3,776,536

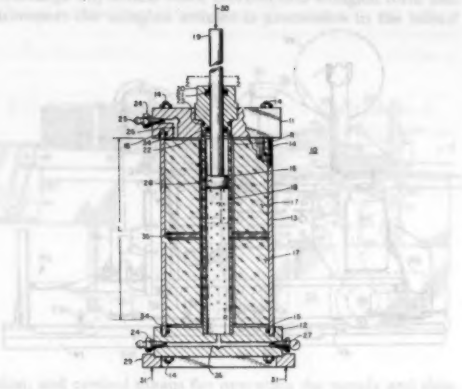
CUSHION MOUNTING

Homer I. Henderson, 2220 Live Oak St., San Angelo, Tex.

Continuation-in-part of Ser. No. 12,589, Feb. 19, 1970, which is a continuation of Ser. No. 768,573, Aug. 19, 1968, abandoned, which is a continuation of Ser. No. 542,491, April 14, 1966, abandoned. This application Feb. 10, 1972, Ser. No. 225,311
Int. Cl. B60q *11/62*
U.S. Cl. 267—35 **10 Claims**

A cushion mounting comprising a housing containing a liquid and a solid material having a bulk modulus of elasticity lower than that of the liquid. A load-carrying member is pro-

vided for supporting a load. The load-carrying member is mounted to reciprocate with respect to the housing so that the



load-carrying member displaces some of the liquid so as to stress the liquid and solid according to the amount of displacement.

3,776,537

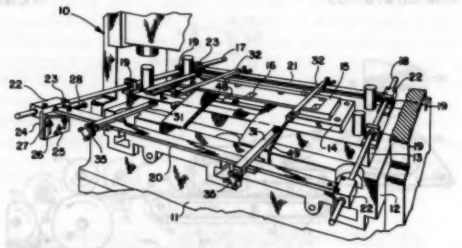
LOADER FOR POWER PRESSES

Victor P. Smith, Mansfield, and Charles C. Smith, Lucas, both of Ohio, assignors to The Tappan Company, Mansfield, Ohio

Filed Aug. 7, 1972, Ser. No. 278,405

Int. Cl. B65g 9/00

U.S. Cl. 269—13 **11 Claims**



A manual loader is provided in the form of a rigid frame moved by hand from a loading position in front of the press to carry the stock into the same for working on loading fingers bridging the frame, each finger having two spaced aligned parts with depressible stops for pushing and pulling stock respectively to load and unload the same. The assembly permits adjustment of spacing of finger parts for stock width variation, lateral adjustment of the fingers, and vertical adjustment thereof. During unloading, the worked piece falls freely by gravity from the loader in approaching the loading position to receive another piece to be inserted in the press.

3,776,538

JIG FOR USE IN APPARATUS FOR SECURING AN ELONGATED METAL MEMBER TO A FLAT METAL SHEET

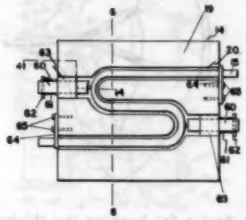
Edward G. Beck, Jr., 532 S. Ft. Thomas Ave., Ft. Thomas, Tenn.

Division of Ser. No. 673,138, Oct. 5, 1967, Pat. No. 3,514,834, which is a continuation-in-part of Ser. No. 523,619, Jan. 28, 1966, abandoned. This application Mar. 24, 1972, Ser. No. 237,989

Int. Cl. B23q 1/00

U.S. Cl. 269—46 **4 Claims**

A method of securing metallic tubing and the like to a flat metal sheet while maintaining the flatness of the sheet so that the composite tube and sheet may be used as radiant heating or cooling panels in building interiors where distortion or wrinkling of the flat sheet would be undesirable. The apparatus comprises a heating station where a composite of sheet, of suitably disposed bonding material, and a piece of tubing in properly assembled relationship and under pressure are heated to induce a bond between the tubing and the sheet while maintaining the sheet in flat condition. An assembly station is provided including a jig in which the piece of tubing



may be accurately located, means for accurately locating the jig with respect to the sheet, and means for raising and lowering the jig and for releasing the jig from the raising and lowering means so that it may move with the assembly from the assembly stations to the heating station. After the heating cycle, the assembly moves to a cooling station (which may be the same as the assembly station) for a cooling cycle. A combined assembly and cooling station may be provided on each side of the heating station, each assembly station having a jig whereby production may be speeded up.

3,776,539

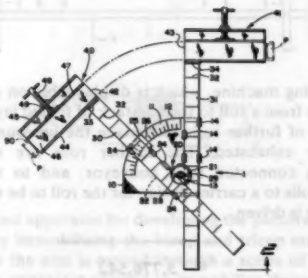
PLASTIC PIPE BENDING JIG

John S. Curtis, 3659 Cummings Rd., Cleveland Heights, Ohio, and Lee A. Miller, 15104 Hill Dr., Novelty, Ohio

Filed May 19, 1971, Ser. No. 144,817

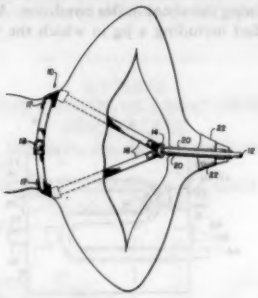
Int. Cl. B29g 7/00; B23q 3/06

U.S. Cl. 269—81 **10 Claims**



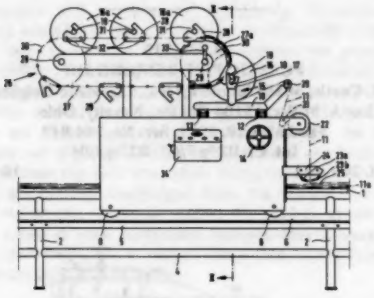
A plastic pipe bending jig for establishing bend curvature and configuration having a plurality of operatively interconnected arms, pipe receiving clamps connected to the radial extremities of such arms, such clamps being radially and angularly adjustable to the desired radius and angle of curvature for the pipe, and indicia associated with the jig for determining such radial and angular displacement of the clamps. The jig is used by adjusting the clamps to define the desired pipe configuration, heating the pipe until pliable and placing the same in the clamps until hardened.

3,776,540
BED STIRRUP FOR PELVIC EXAMINATIONS
Edward N. Comando, 120 Millburn Ave., Livingston, N.J.
Filed Mar. 23, 1972, Ser. No. 237,449
Int. Cl. A61g *13/00*
U.S. Cl. 269—328 10 Claims



A restraining device for keeping the thighs and knees far apart and enabling an efficient pelvic examination of a patient in a home or hospital bed without the use of an examining table with stirrups specifically means for that purpose.

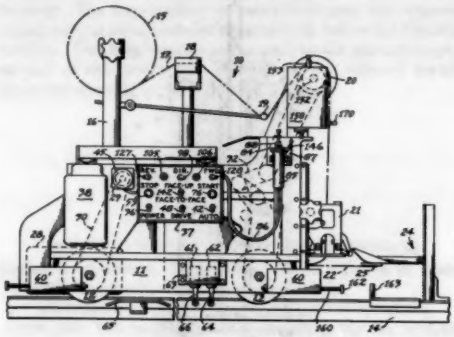
3,776,541
CLOTH FOLDING MACHINE
Gunter Stumpf, 7421 Mehrstetten, Kreis Munsigen, Germany
Filed July 14, 1971, Ser. No. 162,350
Claims priority, application Germany, July 21, 1970, P 20 36 127.7
Int. Cl. B65h *29/46*
U.S. Cl. 270—31 9 Claims



A folding machine, which is displaceable on a table to lay out cloth from a roll to form a stack of folded layers, carries a pluraltiy of further rolls to replace the unwound rolls when they are exhausted. The further rolls are supported in receivers connected to a conveyor, and to transport the further rolls to a carrier device for the roll to be unwound, the conveyor is driven.

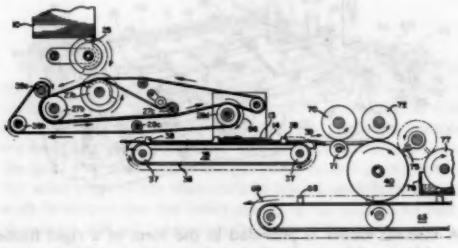
3,776,542
ELECTRICALLY CONTROLLED CLOTH SPREADING MACHINE
Robert W. Benson; James Ronald Chapman; Robert G. Reed, and Hoyt L. Smith, all of Nashville, Tenn., assignors to Cutters Machine Company, Inc., Nashville, Tenn.
Division of Ser. No. 857,509, Sept. 12, 1969, Pat. No. 3,663,006. This application Feb. 25, 1972, Ser. No. 229,602
Int. Cl. B65n *29/46*
U.S. Cl. 270—31 3 Claims

An electrically driven and controlled cloth spreading machine including means for reversing the travel of the machine, means for controlling the high and low speeds of the machine, means for causing the machine to fail safe at low speed upon power failure and open circuit conditions caused by different changes in function of the machine.



The machine is also provided with various selective controls for manual, semi-automatic and automatic operation of the machine, and for spreading cloth face-to-face, face-up or face-down.

3,776,543
REVERSIBLE TIP-ON MACHINE
William M. Edwards, West Milton, Ohio, assignor to The McCall Printing Company, Dayton, Ohio
Filed Nov. 23, 1971, Ser. No. 201,364
Int. Cl. B42b *5/00*
U.S. Cl. 270—53 3 Claims

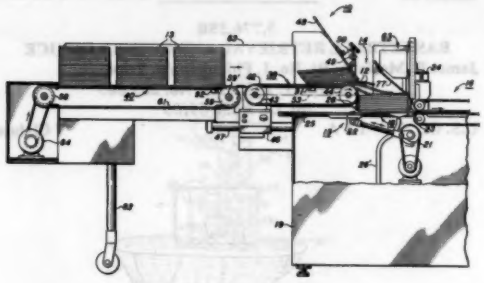


A machine for applying inserts to signatures to be gathered into books or magazines is provided with a reversible insert conveyor which can selectively orient either a leading or a trailing edge of an insert to coincide with the backbone edge of a corresponding signature. This allows multi-leaf inserts to be fed initially with a folded edge forward, and then re-oriented to position a free edge of one leaf along the backbone edge of an insert, whereby a fold-out multi-leaf insert is readily accommodated into the magazine.

3,776,544
AUTOMATIC LOADING APPARATUS
Donald W. Watson, Arlington Heights, and Albert G. Enskat, Barrington, both of Ill., assignors to Xerox, Inc., Stamford, Conn.
Filed Sept. 23, 1968, Ser. No. 761,515
Int. Cl. B65g *60/00*
U.S. Cl. 271—3 6 Claims

An automatic loading apparatus designed to maintain supply of articles at the infeed station of an article processor; the apparatus including a supply conveyor for bringing articles which may be in the form of stacks forward; a shingling con-

veyor downstream of the supply conveyor for receiving articles from the supply conveyor, the shingling conveyor serving to rearrange any article stack thereon into shingled form and to transport the shingled articles in procession to the infeed



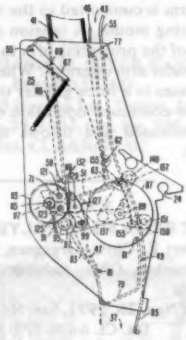
station; and control means for operating the supply and shingling conveyors in response to the demand for articles at said infeed station whereby to maintain a stack-like supply of articles at the infeed station.

3,776,545

UNITARY LEDGER FEEDER AND STACKER WITH REFEED FROM A STACKER HOLD POSITION

Howard P. White, Livonia, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed July 3, 1972, Ser. No. 268,579
Int. Cl. B65h *1/14, 31/06*
U.S. Cl. 271—4 **27 Claims**



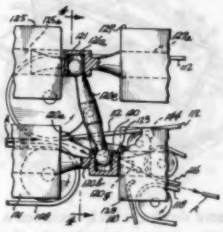
A unitary ledger handling device is provided for ready and convenient attachment to the forms handling mechanism of an accounting machine or the like, the accounting machine being effective for readably and writably processing ledger-type documents as well as for printably recording transactions on fan-fold or continuous journal paper. The device includes a hopper compartment into which the documents to be processed are manually deposited, a stacker compartment into which completely processed documents are automatically advanced, and a document hold position disposed contiguously downstream of the stacker compartment where partially processed documents are stored pending the generation of data to be recorded in summary thereon. Means are provided within the unitary device for automatically feeding documents singly from the hopper compartment to the processing station of the accounting machine, for automatically advancing partially and fully processed documents from the processing station to the document hold position and to the stacker compartment, respectively, and for recallably feeding partially processed documents from the document hold position to the processing station to complete the processing thereof.

3,776,546

SELECTIVE ARTICLE DIRECTOR MULTIPOSITION GATE

Arlen J. Erickson, and Paul A. Carlstedt, both of Seattle, Wash., assignors to CX Processing Laboratories, Inc., Seattle, Wash.

Filed Oct. 17, 1972, Ser. No. 298,351
Int. Cl. B65h *29/58*
U.S. Cl. 271—64 **5 Claims**



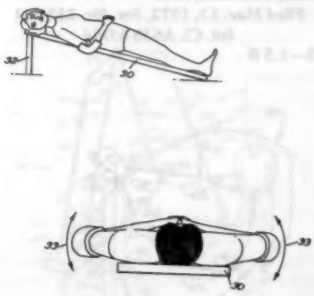
An article directing gate selectively routes advancing articles such as photoprints into any of three offbear paths in accordance with simultaneous energization of different combinations of two of four electromagnet relays with the other two remaining deenergized. The relay armatures act on the pivoted gate through a walking beam and gate crank arm.

3,776,547

METHOD OF EXERCISE FOR PECTORAL MUSCLE DEVELOPMENT

Albert G. Gaboriault, 401 Armistice Blvd., Pawtucket, R.I.

Filed Oct. 25, 1972, Ser. No. 300,451
Int. Cl. A63b *23/00*
U.S. Cl. 272—57 R **3 Claims**



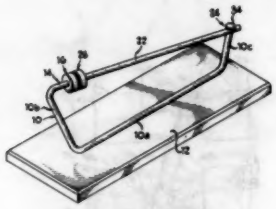
A method and apparatus for developing the pectoral muscle of a female by immobilizing the bicep and tricep muscles of the arm while the arm is moved through a series of exercise positions. The apparatus utilized to immobilize these muscles is a saddle-like member that consists effectively of two sections positioned substantially at right angles to each other with a bight portion where the two meet. These two sections and the bight portion have a U-shaped cross section that embraces the underside of the elbow area of the arm and maintains the elbow in a bent condition. The saddle-like member is structurally rigid to prevent extension of the arm. It may be in the form of a solid dense material or it may be in the form of a hollow shell that can be filled with shot, sand, water, etc. A strap is attached to the opposite sides in the area of the bight portion of the saddle-like member for securing it to arm of the female exerciser.

3,776,548

MAGNETIC ATTRACTION APPARATUS

Marvin I. Glass, Chicago, and Jeffrey D. Breslow, Highland Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Sept. 15, 1972, Ser. No. 289,574
Int. Cl. A63b 67/00
U.S. Cl. 273—1 M 3 Claims



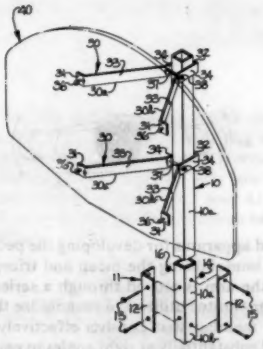
A novelty or game device which includes a pair of magnets provided with relative movement whereby the movement may be caused to stop should the magnets be brought into sufficiently close proximity to each other to be mutually attracted thereby. One magnet is immovably mounted on an upright support member, and a second magnet is mounted on the free swinging end of an elongated manually manipulatable support arm. The opposite end of the support arm is pivoted to a second upright support member spaced from the first support member. As the support arm is swung about the second upright support member, the magnet on the free end thereof is swung in a defined circle into sufficiently close proximity to the fixed magnet whereby the two magnets may mutually attract each other and stop the swinging magnet only if it is travelling at a sufficiently slow rate of speed.

3,776,549

BASKETBALL BACKBOARD SUPPORT ASSEMBLY

Joseph Francis Ganis, Charlotte, N.C., assignor to E-Z Up Industries, Inc., Charlotte, N.C.

Filed Mar. 13, 1972, Ser. No. 233,931
Int. Cl. A63b 63/04
U.S. Cl. 273—1.5 R 3 Claims



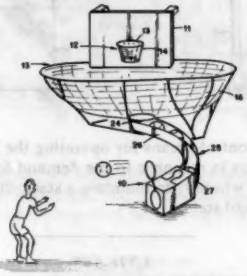
A basketball goal assembly designed for ease of assembly and adjustment, and including an upright, rectangular pole formed of a plurality of relatively short, aligned tubular pole components, each having substantially the same cross-sectional dimension. Two L-shaped angle brackets splice the pole components together. Each bracket engages two adjacent sides of a pole component and overlaps each of two adjacent components. A pair of bolts extend through the angle brackets and pole components, the bolts being perpendicular to each other, for securing same together to form a rigid, rectangular pole. A pair of vertically spaced backboard brackets are carried by the upper end of the pole and support a backboard, to which a basketball goal is attached.

3,776,550

BASKETBALL RETRIEVAL AND RETURN DEVICE

James R. McNabb, Rt. No. 1, Philadelphia, Tenn.

Filed Sept. 1, 1972, Ser. No. 285,867
Int. Cl. A63b 69/00
U.S. Cl. 273—1.5 A 7 Claims



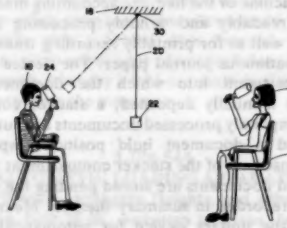
A large basket shaped framework enclosed by an outer covering is positioned beneath a basketball basket. A chute leads from the bottom of this framework to a basketball return mechanism. The return mechanism comprises a motor driven rotating projecting arm and a transfer arm for transferring a basketball from the end of the chute to the projecting arm. The projecting arm is connected to the motor by a drive shaft and a torsion spring mount. A tension spring controlled arm engages the end of the projecting arm to prevent it from rotating while the transfer arm operates. When the force in the torsion spring increases to a force greater than that of the tension spring, due to the continued operation of the motor, the projecting arm is released and throws the basketball resting thereon to a user.

3,776,551

RESILIENT RESIN FOAM POLYHEDRON & BAT

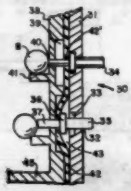
Joseph P. Schaller; E. Chris Jorgensen, and Louis J. Critelli, Jr., all of Columbus, Ohio, assignors to Skill Sports, Inc., Columbus, Ohio

Filed Nov. 26, 1971, Ser. No. 202,249
Int. Cl. A63b 71/02
U.S. Cl. 273—95 A 7 Claims



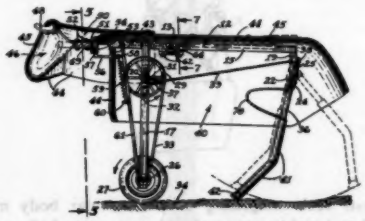
An amusement apparatus for contests of skill and amusement between two players. A resiliently deformable, polyesterurethane foam cube is suspended by a cord from the ceiling of a room. Each of the opposing players, seated on radially opposite side of the cord, grasp a bat and alternately strike the cube and propel it toward his opponent.

3,776,552
BOARD GAME APPARATUS
Jerome H. Lemelson, 85 Rector St., Metuchen, N.J.
Filed Jan. 24, 1972, Ser. No. 220,160
Int. Cl. A63f 3/00
U.S. Cl. 273—130 R 10 Claims



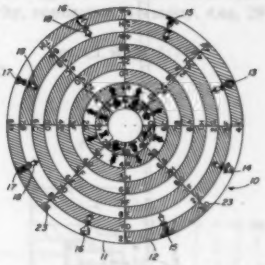
Game apparatus is provided in which a plurality of pin-like members are moveable through a playing board to effect scoring. Several configurations are provided, each of which utilizes a flexible, rubber-type sheet material to either frictionally retain a moveable member or spring-bias said moveable member so that when the moveable member is moved, it will be returned thereby to a pre-moved location. The constructions provided herein permit the production of a variety of games and game devices at relatively low cost due to the elimination of separate springs and retaining means.

3,776,553
ANIMATED MECHANICAL STEER HAVING SPRING BIASED HEAD
Robert L. Kelton, 1895 Hayden Ln., Tempe, Ariz.
Filed Dec. 29, 1972, Ser. No. 319,485
Int. Cl. A63b 71/02
U.S. Cl. 273—105.2 6 Claims



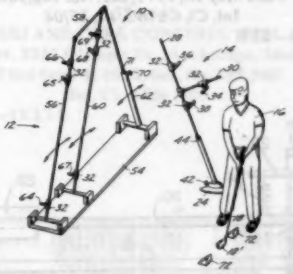
An animated mechanically operated steer which simulates the appearance and natural movements of a live animal used for practicing the art of cattle roping from horseback and to train a horse to follow the moving steer at the proper speed and distance for roping or lassoing purposes. An arm rotatably secured to a pedestal is also secured to the steer and drives the steer. The back legs of the steer move in an arcuate path to simulate a live animal. The head is pivotally secured to the frame and comprises a pair of horns mounted thereon. A pair of springs are mounted on the frame to opposite sides of the head to hold the head in a vertical position. Thereby, when the head is lassoed by a rope, it moves in an arcuate manner to dislodge the rope in a live steer simulated manner.

3,776,554
CIRCULAR PLAYING SURFACE HAVING CODED INDICIA
Fernando A. Capablanca, 1231 Red Rd., Coral Gables, Fla., and Douglas E. Whitney, P.O. Box 523, Wenham, Mass.
Filed Dec. 8, 1971, Ser. No. 205,958
Int. Cl. A63f 3/02
U.S. Cl. 273—131 AB 4 Claims



A circular playing surface, specifically suitable for use in a circular chess game, consisting of sixty-four spaces of alternately light and dark color arranged in eight radial files and eight concentric ranks of eight spaces each, wherein discrete coded indicia are provided individually on the spaces to indicate spiral moves along series of diagonally adjacent spaces of like color. Such discrete coded indicia are letters and numbers, having like indicia for each spiral.

3,776,555
GOLF CLUB SWING TRAINING APPARATUS
Smith M. Hagaman, 559 Westover Ave., Winston-Salem, N.C.
Filed June 19, 1972, Ser. No. 263,996
Int. Cl. A63b 69/36
U.S. Cl. 273—186 R 18 Claims



First and second arrays of photoelectric units respectively delineate the vertically inclined plane and the arcuate paths traveled by the clubhead during a full golf swing, and through associated electrical circuitry cause actuation of signaling devices upon the performance of an improper swing by the golfer. The signaling devices give immediate audible notification of an error in a golf swing, and also indicate the approximate location of the error or errors. The photoelectric units are physically spaced from the golfer so as to not impede his natural swing, and are adjustably movable and selectively energizible so as to readily permit use of the apparatus by golfers who differ in size and/or in other physical characteristics, and so as to permit, if desired, the use of progressive teaching techniques.

3,776,556

GOLF CLUB SWING TRAINING DEVICE

Charles S. McLaughlin, 181 Grove St., Cambridge, Mass.

Filed Aug. 2, 1972, Ser. No. 277,471
Int. Cl. A63b *69/36*
U.S. Cl. 273—186 A 5 Claims

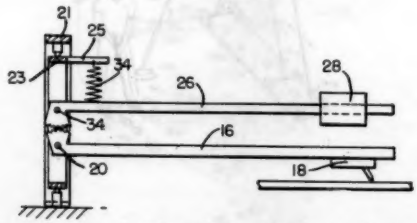
A tear drop shaped body containing a pair of differently oriented and pitched whistles is attached to the shaft of a golf stick to indicate slices and hooks when the golf stick is swung. When the golf stick is properly swung, neither whistle will produce a sound.

3,776,557

DYNAMICALLY-BALANCED PHONOGRAPH ARM

Jacob Rabinow, 6920 Selkirk Dr., Bethesda, Md.

Filed May 13, 1971, Ser. No. 142,908
Int. Cl. G11b *3/14, 25/04*
U.S. Cl. 274—23 R 16 Claims



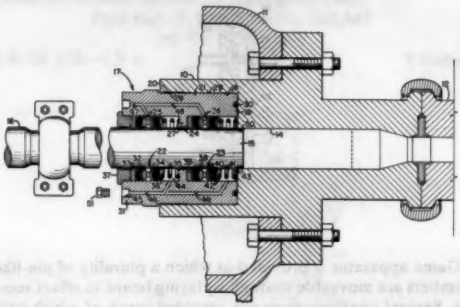
A conventional phonograph arm consists essentially of a balanced rod on one end of which is mounted a phono pick-up device (cartridge) and at the other end a counterweight. A pivot system located near the counterweight is so arranged that the cartridge can move vertically and laterally. Such arms suffer from the fact that when the turntable is suddenly tilted or vibrated the cartridge frequently leaves the surface of the record. The present disclosure describes the use of a two-element arm where the two elements are interconnected so as to rotate in opposite directions so that rotational motions of the machine do not cause the cartridge to leave the record.

3,776,558

TANDEM PACKING FOR A RECIPROCATING PUMP

William C. Maurer, Houston; Joe K. Heilhecker, Bellaire, and Everett H. Lock, Houston, all of Tex., assignors to Esso Production Research Company, Houston, Tex.

Filed Mar. 17, 1972, Ser. No. 235,514
Int. Cl. F16j *15/18*
U.S. Cl. 277—9 9 Claims



A packing assembly for a pump includes a pair of packings arranged in tandem along the plunger of a reciprocating pump or along the shaft of a centrifugal pump to provide axially-spaced sealing intervals. The tandem packing arrangement permits the pump to be operated through two stages, with separate packings providing the seal in each stage.

3,776,559

SHAFT SEALS

Trevor Lewis Cawthorn, Norfolk, England, assignor to Cooper Roller Bearings Company Limited, King's Lynn, Norfolk, England

Filed Jan. 18, 1971, Ser. No. 106,976
Claims priority, application Germany, Oct. 20, 1970, P 20 51 500.8; Japan, Oct. 20, 1970, 45/91691
Int. Cl. F16j *15/48*
U.S. Cl. 277—56 4 Claims

A shaft seal comprising a split annular body made of resilient material to surround and engage the shaft and a split ring adapted to surround the body and having its ends shaped to engage each other in a locked condition.

3,776,560

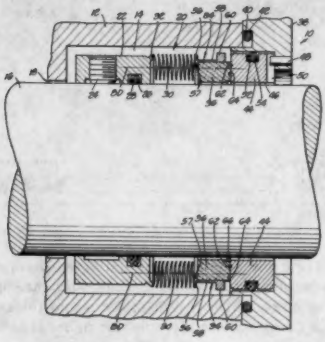
BELLOWS TYPE FLUID SEAL

Robert S. Wentworth, Jr., Wilmington, Calif., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Mar. 4, 1971, Ser. No. 121,099
Int. Cl. F16j *15/36*
U.S. Cl. 277—88 5 Claims

A bellows type mechanical fluid seal combination including a first sealing ring structure having an annular sealing face adapted for mounting to a stationary member, a second sealing ring structure having a complementary annular sealing face adapted for mounting to a rotatable member, and an axi-

ally extendible cylindrical bellows structure included with one of the sealing ring structures and cooperating to urge the sealing faces of the sealing rings into sealing relationship responsive to applied fluid pressure. The improvement resides in the



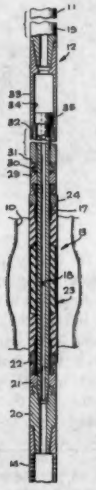
relative shape and configuration provided for one of the sealing ring structures to attain improved utilization of sealing face areas within a seal installation space of limited dimensions.

3,776,561

FORMATION OF WELL PACKERS

Robert L. Haney, 111 Massey Pl., S.W., Calgary, Alberta, Canada

Filed Oct. 16, 1970, Ser. No. 81,412
Int. Cl. F16j *15/10*
U.S. Cl. 277—116.8 **9 Claims**



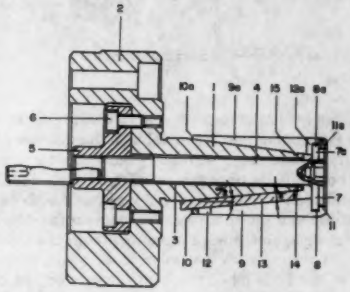
A well packer including a sleeve disposed about a pipe or other carrier structure and adapted to be compressed axially in a manner expanding the sleeve radially outwardly to form a seal in a well. The sleeve has a longitudinally central portion of relatively soft elastomeric material and two opposite end portions of harder elastomeric material, with annular plates desirably being provided between the end portions and the softer central body. In manufacturing the sleeve, a thin outer layer of relatively hard elastomer is provided about the body of softer material in order to allow accurate shaping of the outer surface of the packer at the location of the soft material, by machining the thin outer layer at that location to a desired circular cross section.

3,776,562

ADJUSTABLE MANDREL FOR CLAMPING A WORK PIECE

Werner Johann Gross, Heidelberg; Gunter Franz Lanzerath, Heidelberg-Wieblingen; Helmut Karl Patzer, Ilgen; Joachim Klauss Maennchen, Wiesloch; Helmuth Rieger, Geidelberg-Wieblingen, and Horst Welberg, Edingen, all of Germany, assignors to Borg-Warner Stieber GmbH, Heidelberg, Germany

Filed Aug. 11, 1972, Ser. No. 280,007
Claims priority, application Germany, Aug. 20, 1971, G 71 31 831.5
Int. Cl. B23b *31/40*
U.S. Cl. 279—2 **16 Claims**



An adjustable mandrel for gripping a work piece includes a tapered arbor and collet having an adapter sleeve inserted therebetween. Preferably, a series of interchangeable adapter sleeves is provided for extending the gripping range of the mandrel.

3,776,563

SKI AND CORE CONSTRUCTION

Allen R. Tigert, 2031 Olympic Dr., Anchorage, Alaska

Filed Sept. 1, 1972, Ser. No. 285,560
Int. Cl. A63c *5/00*
U.S. Cl. 280—11.13 L **9 Claims**

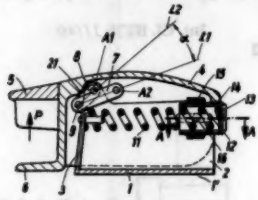
A ski body including a body core laminated between top and bottom reinforcing sheets or panels. The top and bottom sheets are in turn covered by a top outer surface panel and a plastic, or other material, lower running surface or sheet. The core consists of a plurality of transversely elongated and longitudinally spaced links with adjacent link sides provided with tightly interdigitated knuckles. The spaces between adjacent knuckles on each side of each link seatingly and tightly receive the opposing knuckles of the adjacent link and the transversely overlapped knuckle surfaces are frictionally engaged with each other and may be roughened to promote additional stiffness of the ski core.

3,776,564

RELEASING HEEL RETAINER

Paul Unger, Bruckwiesenstr. 113, Altenberg near Nurnberg, Germany

Filed Sept. 27, 1971, Ser. No. 183,935
Claims priority, application Germany, Sept. 26, 1970, P 20 47 519.8
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 12 Claims



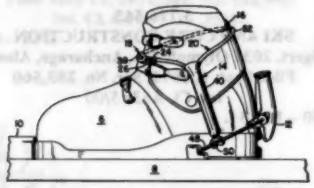
Releasing heel retainer with sole retaining part and stepping spur for ski binding that is pivotable in the manner of a sliding crank arrangement on a stationary base about a front axis extending horizontally transversely of the longitudinal extent of the ski and slidably journalled and supported with its rearward end remote from the sole retaining part on the base, where a release acting against spring pressure effects the release of the ski boot in response to excessive load, while the crank-like linkage of the housing of the heel retainer on the base is by way of a linked lever device and the journalling of the rearward housing part on the base is slidable against spring action and is simultaneously formed as a rotatable bearing.

3,776,565

SKI SAFETY STRAP

James E. Granville, 631 Larkin St., San Francisco, Calif.

Filed Feb. 19, 1971, Ser. No. 116,986
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 N 12 Claims



A safety strap for preventing runaway skis having a quick release fastener to disengagingly connect a ski boot with a ski. The fastener is constructed of a flexible, readily stretchable elongate member which permits substantial elongations of the member when subjected to axial forces to protect the skier's foot and leg from possible injuries when the ski is disengaged from the boot under dynamic conditions.

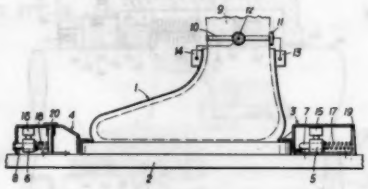
3,776,566

SAFETY SKI BINDING

Thomas Gordan Smolka, Wien-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland

Filed July 6, 1971, Ser. No. 159,789
Claims priority, application Austria, July 8, 1970, 6161
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 M 4 Claims

Safety release bindings for action between a ski and a ski boot. Means are provided for utilizing muscular stress of the skier and utilizing a preselected value of same for releasing the binding. In certain embodiments, the muscular stress is measured by the bio-electrical output of the skier's muscles. In other embodiments the muscular stress is measured by physical movement of the skier's foot within or with respect to his ski boot. In one embodiment, a primary measurement is made of such muscular stress while a secondary measurement is made of the stress between the ski boot and the ski, both of said stresses being required to coincide in order to release the ski.

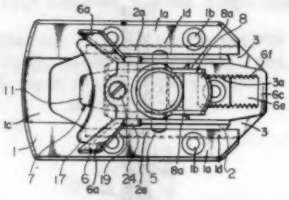


3,776,567

HEEL PIECE

Giichi Shimizu, No. 3-5-16, Nishi Azabu, and Teiji Takahashi, both of Tokyo, Japan, assignors to said Shimizu, by said Takahashi

Filed Aug. 2, 1971, Ser. No. 168,109
Claims priority, application Japan, Aug. 5, 1970, 45/67965
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims



A heel holding device for safety ski bindings comprising stationary guide means, pivotal stepping-down means and spring-loaded pivotal heel holding-down means, said guide means having two surfaces, one being arcuate and substantially parallel the other being flat and substantially vertical with respect to the plane of the ski, said holding-down means being adapted to pivot from said arcuate guide face portion to said vertical guide face portion of the guide means upon said stepping-down means being depressed.

3,776,568

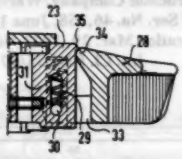
TOE IRON FOR SAFETY SKI BINDINGS

Hannes Marker, Hauptstrasse 51-53, Garmisch-Partenkirchen, Germany

Division of Ser. No. 81,702, Oct. 19, 1970, Pat. No. 3,722,902.
This application Feb. 22, 1972, Ser. No. 227,808
Claims priority, application Germany, Nov. 11, 1969, P 19 56 653.1
Int. Cl. A63c 9/00
U.S. Cl. 280—11.35 T 3 Claims

The toe iron comprises a soleholder carrier and an upwardly movable soleholder. The soleholder is held on the soleholder carrier by means of a cam slot to be movable approximately vertically upwardly against the force of at least one return spring and is also pivoted to the soleholder carrier by means of

a horizontal transverse pivot. The sole-holder has a lower surface, which in the normal position of the soleholder engages at least one supporting surface of the soleholder carrier. The top



part of the soleholder bears on the soleholder carrier by means of a locking or follower arm, which holds the soleholder against a pivotal movement in its normal position.

3,776,569

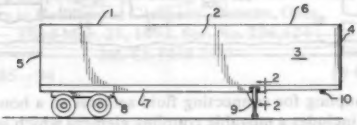
TRAILER LANDING GEAR ARRANGEMENT

Edwin L. Carmel, and Olaf W. Schirmer, both of Cincinnati, Ohio, assignors to Pullman Incorporated, Chicago, Ill.

Filed Jan. 27, 1972, Ser. No. 221,157

Int. Cl. B62d *21/00*

U.S. Cl. 280—106 T **7 Claims**



A highway trailer having a landing gear mounted on each side to each main rail of the trailer by means of bolts which attach the landing gear mounting plate to the main rail mounting angles and a single piece mounting brace that is attached to the landing gear tab by bolts, and the top edge of the single piece mounting brace is welded to the lower flange of the main rail and to the lower flange of the landing gear crossmember, the single piece mounting brace being trapezoidal shaped and bent at 90° about its vertical center line to provide for two diaphragm plate portions, one for each direction of force, as well as providing opposing stiffeners which strengthen the opposite plane.

3,776,570

AIR BAG FOR MOTOR VEHICLES FOR THE PREVENTION OF INJURIES IN COLLISIONS

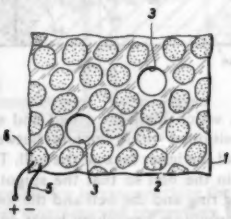
Per Olof Weman, Stockholm, Sweden, assignor to Klippah GmbH, Hamburg, Germany

Filed June 11, 1971, Ser. No. 152,130

Claims priority, application Germany, June 16, 1970, P 20 29 587.8

Int. Cl. B60r *21/08*

U.S. Cl. 280—150 AB **5 Claims**



An air bag for preventing injuries to the passengers of a motor vehicle having on the inner wall of the bag a coating of a substance adapted to generate a gas to inflate the air bag. The coating may be arranged in discrete sections and be fired by an electric ignition device. Additionally air intake openings may be provided, for sucking in air from the passenger compartment.

3,776,571

CASING FOR TRACK-LAYING AND WHEEL-EQUIPPED VEHICLES

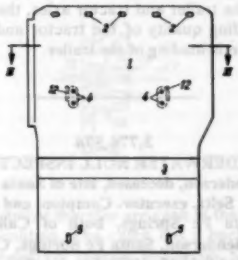
Martin Gilles, Cologne, and Anton Thiel, Garching/Alz, both of Germany, assignors to Clouth Gummiwerke AG, Cologne, Germany

Filed Oct. 14, 1971, Ser. No. 189,385

Claims priority, application Germany, Oct. 15, 1970, P 20 50 492.1

Int. Cl. B62d *25/16*

U.S. Cl. 280—154.5 R **3 Claims**



A cover for track-laying and wheel-equipped vehicles, which, while consisting of elastic material, is variable in length.

3,776,572

MOTORCYCLE TOWING DEVICE

James Bane, 1337 Amadore Ave., Ontario, Calif.

Filed Sept. 20, 1972, Ser. No. 290,622

Int. Cl. B62d *53/04*

U.S. Cl. 280—292 **3 Claims**

A towing device for motorcycles uses a channel member bent into a segment of a circle to receive the front wheel of a motorcycle. A clamp attaches a plate welded to the channel member to the rear bumper of a vehicle and levers pivotally raise the channel member and wheel off of the ground.

3,776,573

LOAD TRANSFERRING COUPLING DEVICE

Michael F. Paielli, 12360 Roberts, Taylor, Mich.

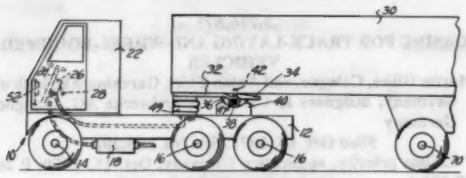
Filed Oct. 4, 1972, Ser. No. 294,977

Int. Cl. B62d *53/00*

U.S. Cl. 280—405 A **6 Claims**

A coupling device for connecting tractor and trailer units which consists of a pivoted coupling member having associated therewith a pivoted flat member supported in the

plane of the coupling member by two inflatable air bags mounted on the tractor. The air bags are connected into the compressed air system of the tractor through a control valve manipulable to change the pressure in the air bags so as to



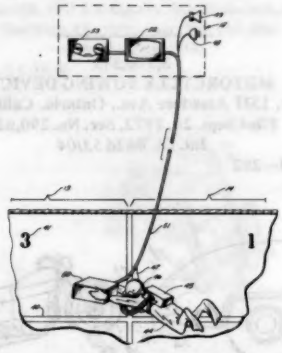
vary the upward thrust on the pivoted flat member and thereby distribute the load in the trailer in a pre-selected manner over the trailer and tractor axles, thereby greatly improving the riding quality of the tractor and simultaneously correcting any mis-loading of the trailer.

3,776,574

UNDERWATER HULL INSPECTION

Donald W. Henderson, deceased, late of Santa Barbara, Calif.; by Joseph A. Seltz. executor. Compton, and Shirley W. Henderson, Santa Fe Springs, both of Calif., assignors to Shirley W. Henderson, Santa Fe Springs, Calif.

Filed Feb. 17, 1972, Ser. No. 227,496
Int. Cl. B63b *59/00*
U.S. Cl. 283—1 **5 Claims**



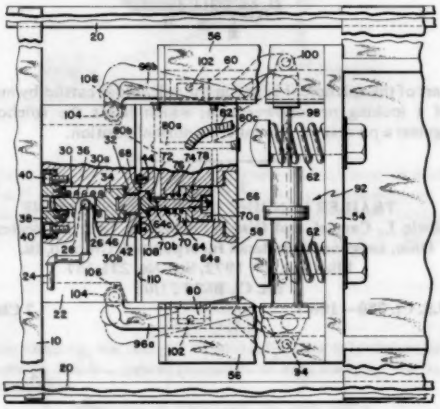
There is described an improved methoo for directing a diver-inspector to a hull location of interest during the process of performing an inspection of the submerged surfaces of the hull of a floating ship. The submerged surface area of the hull is visibly subdivided into a plurality of discrete areas. A designating indicium for each discrete area is applied to each area to be visible from adjacent the area. A map is provided, at an inspection control site, of the several discrete areas into which the hull submerged surface area is subdivided and of the designating indicia applied to the areas. Also, a communication path is provided to the diver-inspector by which the diver, when submerged, may receive instructions from the inspection control site which preferably is located aboard the vessel. By reference to the map, an inspection controller may direct the diver-inspector to a designated hull location of interest for scanning of the hull by an underwater television camera, or by a plate sounding mechanism or the like.

3,776,575

COUPLING DEVICE

Martin Gilvar, Westboro; Robert D. Wykes, Worcester, and Charles S. Mercer, Northboro, all of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Continuation of Ser. No. 46,258, June 15, 1970, abandoned.
This application Mar. 29, 1972, Ser. No. 239,036
Int. Cl. F16l *35/00*
U.S. Cl. 285—18 **7 Claims**



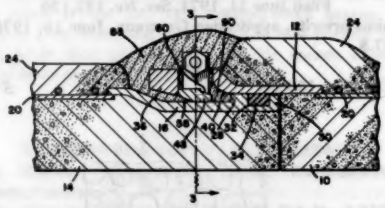
A coupling for connecting fluid services to a housing. The device includes a movable coupling element which is clamped against a mating coupling element attached to the housing as an integral part thereof. Housing conduits communicate with passageways in the mating coupling element, the latter being in communication with the adjacent ends of intermediate passageways in the movable coupling element when the latter is clamped in the operative position. The other ends of the intermediate passageways are connected via flexible conduit means either to remote sources of fluid under pressure or to fluid drains. Seals at the interface between the two coupling elements insure fluid-tight integrity between the communicating passageways.

3,776,576

PIPE ASSEMBLY

Lewis R. Keyser, Dayton, Ohio, assignor to Price Brothers Company, Dayton, Ohio

Filed Apr. 6, 1972, Ser. No. 241,553
Int. Cl. F16l *49/00*
U.S. Cl. 285—27 **8 Claims**



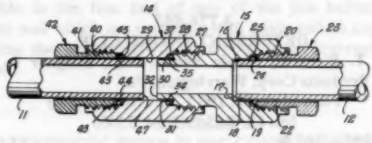
A pipe joint which includes a bell and spigot and a split locking ring positioned within the joint between the outer face of the spigot and the inner face of the bell. The locking ring is expanded within the bell so that the spigot may be inserted into the locking ring and the bell and the locking ring is then contracted to provide a key which bears against an inwardly projecting nose on the bell and an annular rib on the spigot, thereby resisting axial thrust forces tending to separate the bell and spigot.

3,776,577

FLOW CONDUCTOR COUPLING

Weldon G. Dickey, 103 N. Kaufman, Seagoville, Tex.

Filed Nov. 9, 1971, Ser. No. 197,026
Int. Cl. F16l 19/06
U.S. Cl. 285—31 6 Claims



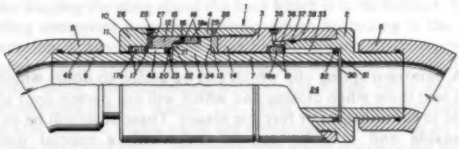
A coupling for connecting adjacent spaced ends of two flow conductors, such as pipes or tubes, which automatically adjusts for variations in the spacing between the two ends and is installable on the two flow conductors without requiring displacement of either flow conductor during such installation or the threading or other adaptation of the two ends.

3,776,578

HIGH PRESSURE ROTATABLE PIPE CONNECTION

Robert L. Jessup, and David L. Farley, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Mar. 21, 1972, Ser. No. 236,624
Int. Cl. F16l 7/00
U.S. Cl. 285—94 19 Claims



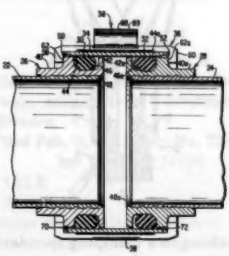
A rotatable pipe connection for rotatably joining two pipe sections for high pressure fluid flow has a pressure balancing internal annular ring open to the flow passage in the connection, and bearings, packing, and seals to provide longitudinal and transverse support and seal against pressure loss.

3,776,579

COUPLING ASSEMBLIES

Edwin J. Gale, Aurora, Colo., assignor to Stanley Aviation Corporation, Denver, Colo.

Filed Mar. 11, 1971, Ser. No. 123,234
Int. Cl. F16l 27/04
U.S. Cl. 285—233 5 Claims



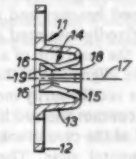
A coupling assembly for interconnecting the adjacent ends of a pair of tubular members and comprising a pair of flange members respectively receiving and fixed to the adjacent ends of the tubular members, a pair of deformable seal rings seated in outwardly open grooves on the flange members, a sleeve telescopically receiving the flange members and bridging the space between the seal rings to engage the seal rings for establishing fluid tight seals between the sleeve and the flange members, a longitudinally split coupler peripherally surrounding the seal ring-engaging sleeve and having radial shoulders that are abuttable with shoulders on the flange members to limit axial movement of the flange members away from each other, and a fastening means for securing the halves of the split coupler circumferentially around the seal ring-engaging sleeve.

3,776,580

CATCHES

Joseph James Michael, Cheltenham, England, assignor to Micro & Precision Mouldings (Cheltenham) Limited, Cheltenham, England

Filed Feb. 28, 1972, Ser. No. 229,698
Int. Cl. E05c 7/00, 9/00, 19/02, 19/06
U.S. Cl. 292—17 11 Claims



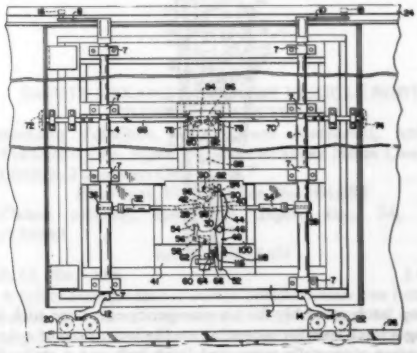
A catch and a striker therefor are each in the form of a one-piece plastics moulding. The catch has a back fixing flange from which a re-entrant tubular formation projects, an inturned portion of such formation being longitudinally slotted whereby it is subdivided into resiliently flexible tongues. The tubular formation has a central bore providing a taper socket for reception of a tapering stem of the striker. The striker has a fixing flange and a catch-engaging stem is offset from and projects generally parallel to the striker flange. A headed formation of the stem results in the striker being gripped by the resilient catch tongues, and this grip and fitting of the tapering stem in the taper socket results in firm lateral location of the striker.

3,776,581

SEALING CAM INTERLOCK

Irving D. Ross, Jr., Barrington, Ill., assignor to The Youngstown Steel Door Company, Cleveland, Ohio

Filed July 26, 1971, Ser. No. 165,897
Int. Cl. E05c 1/12, 9/12
U.S. Cl. 292—39 4 Claims



A cam activated mechanism which permits a railroad car door to be sealed only when the door is in a fully closed posi-

tion. The mechanism is activated by the final rotation of a car door operating lever or handle. An aperture is provided in the handle to allow the insertion of a car seal when the handle is rotated to the proper final position between spaced opposed arms of a sealing fork. Turning the handle imparts rotational movement to a shaft which drives a pinion in meshed engagement with a segmental gear rotatably mounted between the base and cover plates on the car door. The rotational movement of the pinion thus turns the segmental gear. A cam slot is located in the segmental gear and is adapted to admit one end of a cam crank pivotally mounted on the base plate to provide a rocking motion such that the other end of the cam crank which is attached to a bar provides rectilinear motion to the bar. The cam slot is so situated on the segmental gear that it will accept the one end of the cam crank only when the door is closed. Spaced below the segmental gear adjacent the handle is a sealing fork, the housing for which is essentially a U-shaped bracket having two legs and an intermediate portion therebetween which is secured to the base plate. The bracket lies within the periphery of the circumference projected by the handle. A rod having a locking surface thereon is journalled in the legs of the U-shaped bracket and the handle interfering sealing fork arms are fixedly mounted on said rod. The arms are apertured to allow the insertion of a car seal therethrough when said apertures are aligned with the corresponding aperture in the handle. The rectilinearly moving bar has a lateral projection adapted to contact the rod having the locking surface when the one end of the cam crank is dislodged from the cam slot in the segmental gear. The cam crank is in a dislodged position whenever the door is not closed and the sealing apertures are thus prevented from being aligned since the arms are prevented from being positioned on either side of the handle to lock it in place. When contact is effected between the bar and rod, the sealing fork arms are positively held in a position out of the path of the handle so that the handle may be rotated. A seal may be passed through the apertures in the handle and the arms of the sealing fork to seal the railroad car only when the cam crank end is in the cam slot and the door is fully closed.

3,776,582

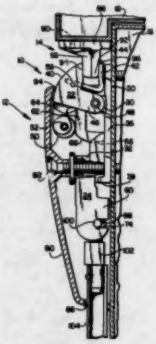
LATCH ASSEMBLY

Walter O. Balducci, New Britain, Conn., assignor to Emhart Corporation, Bloomfield, Conn.

Filed June 4, 1971, Ser. No. 150,023

Int. Cl. E05c *3/26*

U.S. Cl. 292—92 **19 Claims**



A top latch assembly for an emergency-exit door lock including a latch unit for mounting on the inner face of a door and having a pivotally supported latch bolt and a strike for mounting on the door frame and engageable with the latch bolt to shift the bolt toward latched position during closing movement of the door. Rigid and resilient parts of the latch bolt cooperate to grippingly engage an associated portion of the strike therebetween when the latch unit is in a latched position. The latch unit includes a reciprocably movable slide which cooperates with the latch bolt to retain it in a deadlocked position when the door is closed. When the door is open the latch bolt retains the slide in a hold-back position.

3,776,583

DETERRENT SPRING CLIP

Charles T. Biscardi, Maple Shade, N.J., assignor to Merit Metal Products Corp, Warrington, Pa.

Filed Mar. 22, 1972, Ser. No. 236,803

Int. Cl. B65d *55/04*, *55/06*

U.S. Cl. 292—307 R **11 Claims**

A deterrent spring clip which can be added to doors which will seal them when closing and which will not permit door to yield to surreptitious or forcible means. These seals will be expendable and may be opened only with a special tool furnished to authorized personnel.

3,776,584

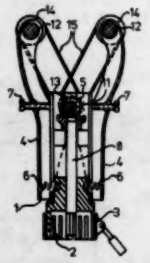
APPARATUS FOR REPLACING TUBULAR LAMPS AND THE LIKE WHICH ARE DIFFICULT OF ACCESS

Gerardus Wilhelmus Van Gerven, Eindhavenseweg 56, Valkenswaard, Netherlands

Filed Mar. 7, 1972, Ser. No. 232,396

Int. Cl. H01k *3/32*

U.S. Cl. 294—21 **6 Claims**



The disclosure relates to a clamping spanner which is to be placed on the end of a control stick and comprises jaw halves which are forced towards each other by springs and which in the opened condition can pass a tubular lamp and in the closed condition can grip around the tube to above the longitudinal central axis, by a driving shaft directed transverse to the plane of said spanner and extending at least approximately through the pivot thereof, which shaft is connected, by means

of a square transmission, to a coupling shaft extending at right angles thereto, said coupling shaft being rotatable from the lower end of the control stick when the spanner is placed on said stick, the driving shaft comprising means which are capable of engaging, with friction, a tubular lamp inserted in the spanner, and by two guide roller shafts which extend parallel to the driving shaft and which are each supported so as to be rotatable in the free end of one of the jaw halves of the spanner and which are provided with guide rollers capable of engaging the upper part of a tubular lamp inserted in the spanner.

3,776,585

SYNTHETIC FIBER SLING CONSTRUCTION

Scott Bridgehouse, Leola, Pa., assignor to Lift-All Company, Inc., Manheim, Pa.

Filed Sept. 15, 1972, Ser. No. 289,542

Int. Cl. B66c 1/12

U.S. Cl. 294—74 **6 Claims**

A sling particularly adapted for use in hoisting heavy objects. The sling is formed in a predetermined length and has loops at each end for connection to the hoisting equipment or for looping the sling about the load which is to be hoisted. The sling comprises a synthetic fabric, which according to the invention is woven in three plies in which each ply comprises chain warps extending throughout the length of the ply, the plies being interconnected both by the filling yarns and by connecting binder warps. The chain warps, the connecting warps and the filling yarns are composed of filaments of the same synthetic fiber. The connecting warps interlace the outer ply on one side with the central ply and interlace the outer ply on the other side with the central ply so that the connecting binder warps on one side do not extend through the entire thickness of the fabric. The binder warps on each side pass around each weft of the central ply as well as around each weft of the outer ply to provide a firm interconnection of the plies. In the event of damage to the webbing, for example by reason of fraying through or other failure of the ply on one side of the webbing, the damaged ply does not destroy the integrity of the remaining two plies which are otherwise undamaged. The failure of the sling at the point of damage is postponed, and the likelihood of the load coming loose from the hoisting equipment is substantially reduced.

3,776,586

GRIPPING DEVICE

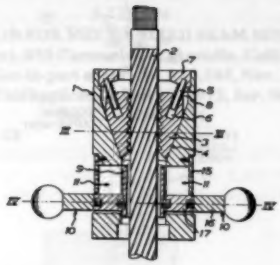
Nils Harald Ahlgren, Saltsjobaden, Sweden, and Odd Jahr, Hovik, Norway, assignors to Uddemann Byggteknik AB, Stockholm, Sweden

Filed Feb. 9, 1972, Ser. No. 224,681

Int. Cl. F16g 11/10

U.S. Cl. 294—102 R **8 Claims**

A gripping device which is adapted to coact with a wire rope, bar or other load-carrying element, comprises a body embracing the element and has wedge-shaped clamping jaws which are arranged around the element, which cooperate with conical guides and are actuated by springs. This gripping device also has opening means consisting of a sleeve or like member for moving the jaws out of engagement with the load-carrying element against the action of the springs, the sleeve having at least one operating arm which projects outside the body of the gripping device and which serves to adjust the sleeve in relation to the body for moving the jaws into and out of engagement with the load-carrying element, and the operating arm is adapted to be latched to the body of the gripping device at least in that position in which the sleeve has moved the jaws out of engagement with the load-carrying element.



3,776,587

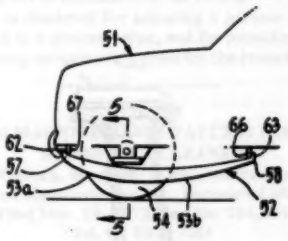
SURFACE VEHICLES WITH VENTURI ATTACHMENT

Kenneth David Oxlade, Lot 3, Knees Rd., Park Orchards, 3114 Australia

Filed Feb. 14, 1972, Ser. No. 225,905

Int. Cl. B62d 37/02

U.S. Cl. 296—1 S **6 Claims**



An automobile or other surface vehicle having the underside thereof formed so as to define a venturi to thereby reduce the tendency of the vehicle to lift from the ground during movement; an attachment for fitting to a vehicle to define such a venturi.

3,776,588

SAFETY ARRANGEMENT FOR VEHICLE BODY CLOSURE STRUCTURES

Katsunobu Sobajima, and Kiyoto Matsuzaki, both of Yokohama City, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed Sept. 27, 1971, Ser. No. 184,084

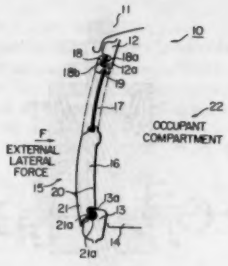
Claims priority, application Japan, Dec. 24, 1970, 45/130463

Int. Cl. B60j 5/04

U.S. Cl. 296—146 **1 Claim**

A safety arrangement of motor vehicle bodies free from collapse by an external transverse force including two coactive engaging means having at least two peripheral crests and corresponding peripheral grooves engageable with each other. The two coactive engaging means are formed either in opposite peripheral structural members of the vehicle body wall defining an opening for a vehicle door or in a corresponding

portion of the vehicle door. The transverse force due to, for example, side collision of the vehicle is born by the two engaging means when it is applied to the vehicle door, thus precluding a danger of the vehicle occupant's being hurt by the intruded or deflected vehicle door.



3,776,589

VEHICLE BODY

Bela Barenyi, Muichingen, and Heinrich Haselmann, Sindelfingen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart-Unterturkheim, Germany

Filed Jan. 27, 1972, Ser. No. 221,173

Claims priority, application Germany, Jan. 30, 1971, P 21 04 454.2

Int. Cl. B62d *27/00*

U.S. Cl. 296—28 R **8 Claims**

A support structure for motor vehicles, especially for passenger motor vehicles, which includes on each side of the vehicle one floor bearer and one roof bearer that are connected within the central area thereof by a door column; the connecting places for the door columns at the floor bearers and at the roof bearers are constructed as stamped-out parts extending in the direction of the door columns.

3,776,590

WINDSHIELD VISOR

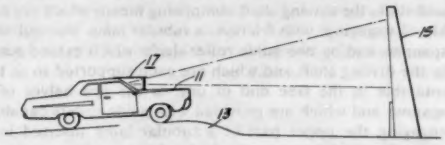
Frank J. Polidora, 827 Elizabeth St., Turtle Creek, Pa.

Filed Aug. 23, 1972, Ser. No. 283,153

Int. Cl. B60j *1/00*, *11/00*

U.S. Cl. 296—95 R **3 Claims**

A flexible membrane supported by a frame comprising stiffeners and legs is fitted to the top of an automobile in such a way that it overhangs the windshield and a portion of the hood of the automobile. The visor protects the windshield from natural precipitation such as rain and snow and the like when persons in an automobile are viewing a motion picture at an outdoor theater.



3,776,591

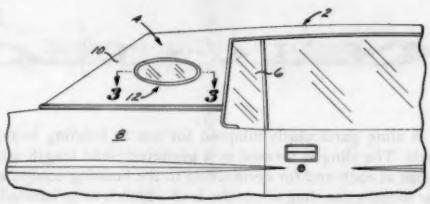
AUTOMOBILE OPERA WINDOW INSTALLATION APPARATUS AND METHOD

Henry B. Krueger, 1105 Barbara St., Redondo Beach, Calif.

Filed Aug. 18, 1972, Ser. No. 281,967

Int. Cl. B60j *1/08*

U.S. Cl. 296—146 **7 Claims**



The quarter panel and headliner of an automobile having openings cut therein, and the flange of a stepped outer ring is secured to the inner surface of the quarter panel. A flanged inner ring is inserted through the headliner opening and telescopes into the outer ring, adequate clearance being provided between the rings to allow for angular adjustments. The space between the telescoped rings is filled with adhesive, the vinyl roof on the automobile is secured in place within the outer ring, and a glass panel and a trim ring are installed in the step of the outer ring with adhesive to complete the installation.

3,776,592

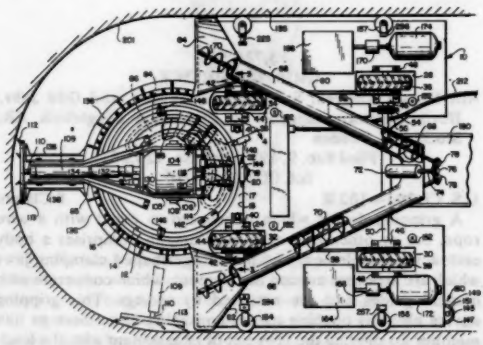
REMOTELY CONTROLLED MINING MACHINE

Alvin L. Ewing, 3317 Osborne Rd., Chester, Va.

Filed Oct. 12, 1972, Ser. No. 296,996

Int. Cl. E21c *35/24*

U.S. Cl. 299—1 **16 Claims**



A coal mining machine operated by remote control to cut coal lying in thick or thin seams and to convey the cut coal out

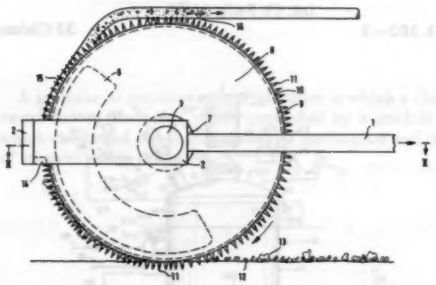
of the shaft cut thereby. The machine can be manipulated to move forward or rearward and can be directed to the left and right. Cutter bits in a cutting assembly mounted on the machine frame are moved in a predetermined path through an angle of 180° as they cut a first cut and are then elevated and moved back along 180° in the opposite direction from the first cut to cut a second cut higher than the first cut. The cutter bits are then lowered to the original level completing their predetermined path. Both the upper and lower limits of the cuts can be adjusted and the base upon which the cutting assembly is connected can be tilted to allow the cutter bits to follow the contour of the coal seam and have its predetermined path varied. The machine comprises a main machine frame mounted on power-driven wheels for movement in forward and rearward directions; a base pivotably mounted to the frame so that it can be tilted relative thereto; a turntable rotatably mounted on the base and carrying a cutting assembly thereon for rotation through 180°, the cutting assembly having cutting bits at one end capable of being moved upwards and downwards; and a control system for actuating a motor for rotating the turntable through a cycle consisting of two opposite and coincident 180° reciprocations, for actuating a hydraulic cylinder to allow the cutting assembly to be pivoted so that the cutting bits are moved to a higher or lower elevation at the end of a 180° reciprocation, and for actuating the wheels to move the frame forward after the turntable and cutting assembly have moved through a complete cycle. Two ammeters measure the current magnitude in the cutter motor along each half of the cycle and indicate to the operator on increases of the load imposed on the cutter motor that the machine is cutting into substances other than coal and that, therefore, some adjustment is necessary to the path of the cutting bits at the end of a shaft mounted on the cutter motor.

3,776,593

APPARATUS FOR RECOVERY OF MAGNETIZABLE MATERIALS FROM THE SEA BOTTOM

Wilhelm H. Kuhlmann-Schaefer, Hannover, and Manfred E. Dinter, Munich, both of Germany, assignors to Preussag Aktiengesellschaft, Hannover, Germany

Filed Mar. 21, 1972, Ser. No. 236,678
Claims priority, application Germany, Mar. 26, 1971, P 21 14 828.7
Int. Cl. E02f *1/00*; E21c *45/00*
U.S. Cl. 299—8 **15 Claims**



Apparatus for collecting manganese or other magnetizable material from the bottom of the sea and conveying it to the sea surface comprising a rotating drum having teeth on the surface thereof to lift said material from said sea bottom, a plurality of magnets mounted inside the drum extending along the axis of the drum through an arc of between 90° and 180°, and a suction means mounted at the surface of the drum near the terminal ends of the magnets to carry the material from the drum to the surface. The magnets do not rotate with the drum surface but remain disposed at the trailing edge of the rotating drum to hold the material on the surface until it reaches the suction conveyor.

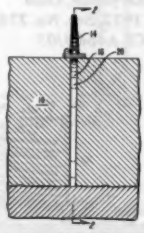
In a preferred form of the invention the arcuate magnets are arranged side by side with the North and South poles alternating with each other in the axial direction of the drum.

3,776,594

METHOD FOR MECHANIZED SEAM MINING

John C. Haspert, 895 Coronado Dr., Arcadia, Calif.

Continuation-in-part of Ser. No. 873,344, Nov. 3, 1969, abandoned. This application Jan. 20, 1972, Ser. No. 219,218
Int. Cl. E21c *27/34*
U.S. Cl. 299—18 **20 Claims**



An ore seam or vein is mined by robbing ore from the side of a pilot hole using a gravity force broach to form a trench. The operators and most of the equipment, except for the broach, are located outside the trench. In weak formations the trench is filled with drilling fluid which lends mechanical support to its walls, and the drilling fluid may also be utilized in collecting the ore or mineral from the trench.

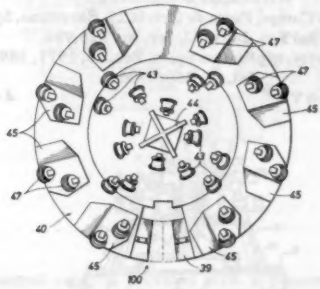
Apparatus is disclosed for adjusting a parasite weight load on the broach to a desired value, and for providing a progressively advancing reciprocating drive for the broach.

3,776,595

TUNNELING MACHINE HAVING ACCESS PASSAGEWAY AND INVERT CLEANER

Douglas F. Winberg, Issaquah, Wash., assignor to Subsurface Machine and Manufacturing Inc., Durango, Colo.

Filed Mar. 14, 1972, Ser. No. 234,509
Int. Cl. E01g *3/04*
U.S. Cl. 299—31 **26 Claims**



A machine for boring a tunnel in a subterranean formation may comprise: a main beam; a cutterhead support assembly attached to the main beam; a cutterhead assembly mounted for rotation on the cutterhead support assembly; and means connected to the main beam for advancing the cutterhead and cutterhead support assemblies to cut a tunnel through the formation. The cutterhead support assembly may include a blade assembly projecting radially toward the walls of the tunnel for cleaning the invert of the tunnel as the cutterhead support assembly advances therethrough. The cutterhead support as-

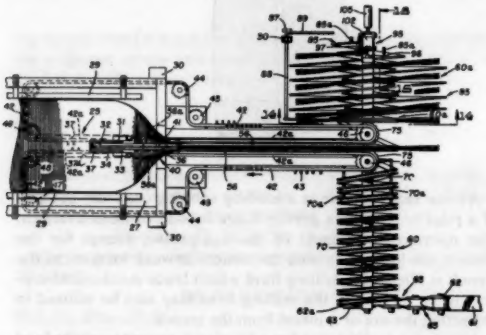
sembly may be provided with a passageway communicating with a passageway beneath the main beam to form a continuous human passageway along the invert of the tunnel, throughout the length of the tunneling machine, through which the face of the cutterhead assembly may be reached. The blade assembly may be mounted on the cutterhead support assembly for movement between first and second positions blocking and unblocking the human passageway, respectively.

3,776,596

APPARATUS FOR PRODUCING BRUSH SECTIONS

Arthur E. Drumm, Rt. 1, Marysville, Ohio

Filed July 25, 1972, Ser. No. 274,912
Int. Cl. A46d *3/05*
U.S. Cl. 300—2 **10 Claims**



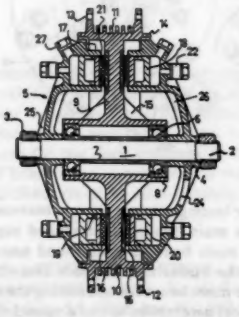
Apparatus for producing brush sections of the type used in heavy-duty work and consisting of bristles anchored in a retaining channel and extending outwardly therefrom. The apparatus feeds the bristles and bends them into hair pin or U-form, feeds the channel-forming metal strip and forms it into an outwardly opening channel, feeds the U-formed bristles over and into the outwardly opening channel, and crimps the sides of the channel inwardly at intervals to clamp the bristles therein, all of these operations being performed in a continuous advance of the materials through the apparatus.

3,776,597

WHEEL HUB ASSEMBLY

Javier Sanglas Camps, Paseo de Gracia 29, Barcelona, Spain

Filed Feb. 24, 1972, Ser. No. 228,984
Claims priority, application Spain, Feb. 26, 1971, 389147
Int. Cl. B60t *1/06*
U.S. Cl. 301—6 V **4 Claims**



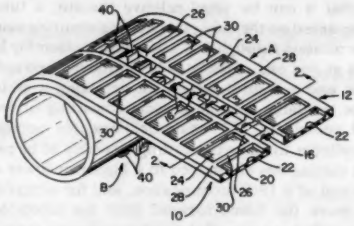
A wheel hub assembly for a motorcycle has a fixed spindle and a boss rotatable about the spindle. A plate forming a brake disc projects radially from the boss and carries the wheel supporting structure on its outer periphery. Secured on the spindle, one to each side of the boss, are two members carrying opposed hydraulic cylinders. The cylinders apply brake blocks to the two faces of the brake disc.

3,776,598

FERRULE FOR SNOWMOBILE TRACK

George E. Nichols, Ottawa, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Filed Oct. 19, 1972, Ser. No. 299,047
Int. Cl. B62d *55/24*
U.S. Cl. 305—38 **13 Claims**



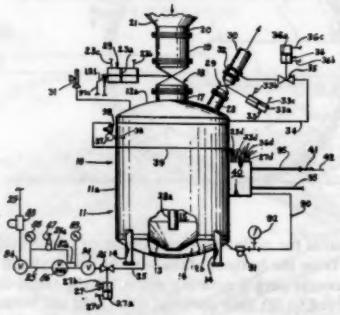
An improved, reinforcing ferrule for the crossbars of an endless flexible track or belt used for driving snowmobiles or like apparatus. The ends of the ferrule are flared at the longitudinal ends thereof in the horizontal plane of the track.

3,776,599

SELF-PURGING, PNEUMATIC CONVEYING APPARATUS INCLUDING FLUID FLOW PUMPS ON SCALES, WITH AGITATOR, VACUUM FILLED, WITH MATERIAL DRYER, AND OF VARIED MEANS OF SEQUENTIAL VALUE OPERATION

Brian R. Reuter, Houston, Tex., assignor to Consolidated Engineering Company, Houston, Tex.

Continuation-in-part of Ser. Nos. 518,533, Jan. 3, 1966, Pat. No. 3,355,221, and Ser. No. 686,018, Nov. 28, 1967, abandoned, and Ser. No. 822,126, May 6, 1969. This application Dec. 16, 1970, Ser. No. 98,567The portion of the term of this patent subsequent to Nov. 28, 1984, has been disclaimed.
Int. Cl. B65g *53/00*
U.S. Cl. 302—3 **32 Claims**



The disclosure, for classification, is to a pressure vessel with fill valve admitting thereinto material to drop onto a perforate diaphragm, thereafter to be transferred, the gas plenum below the diaphragm having activating gas, as compressed air, controlled to communicate therewith. When a batch of material

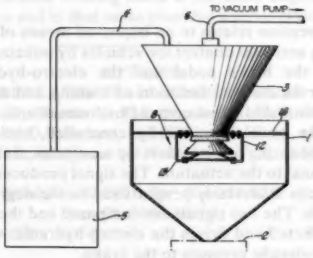
has been drawn in, the fill valve is automatically closed, the activating gas inlet valve is opened to admit activating gas, as compressed air, to pass upwardly through diaphragm and activate the material to a highly flowable state. A discharge valve is then opened to let the pressurized material flow out through a discharge line to point of transfer. As the pressure in material plenum drops, the discharge valve is closed, the activating gas valve is closed, and a purge valve in a by-pass line, around the discharge valve, is opened, and residual pressure purges the residual material as this pressure falls substantially to atmospheric, for a succeeding cycle to begin. The disclosure is to pressure vessels where the material drops onto the diaphragm via gravity when the fill valve opens, such vessels also being shown equipped to close fill valve responsive to at least one of time actuated means, material lever sensor actuated means, and batch weight actuated, vessel supporting scale generated, pressure fluid signal operated circuitry; also variations of circuitry are shown whereby various steps may be controlled by at least one of pressure, time, level probe position, weight and limit switch position.

3,776,600

VALVE FOR VACUUM LOADER

John H. McLeod, Jr., Royal Oak, Mich., assignor to Thoreson-McCosh, Inc., Troy, Mich.

Filed June 7, 1971, Ser. No. 150,610
Int. Cl. B65g *53/60*
U.S. Cl. 302—59 **1 Claim**



A granular or pulverant material loader in which a charging vessel has its discharge outlet controlled by a conical valve which closes and opens in response to application and release of vacuum within the vessel.

3,776,601

METHOD AND APPARATUS FOR CONVEYING PARTICULATE MATERIAL UPWARDLY IN A GAS STREAM

Charles Edwards Capes; Allan Edward McIlhinney, both of Ottawa, and Thomas Allen Tweddle, Orleans, Ontario, all of Canada, assignors to Canadian Patents and Development Limited, Ottawa, Ontario, Canada

Filed Nov. 30, 1971, Ser. No. 203,132
Claims priority, application Canada, Feb. 19, 1971, 105,787
Int. Cl. B65g *53/52*
U.S. Cl. 302—64 **6 Claims**

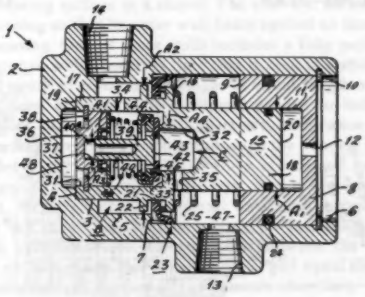
Particulate material is conveyed upwardly in a gas stream in an elongated casing, with the gas stream having a velocity less than the conventional choking velocity, by having gas and particle stream deflecting elements, such as wire mesh cylinders, randomly disposed along the length of the casing.

3,776,602

CONTROL VALVE

Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Aug. 23, 1972, Ser. No. 282,945
Int. Cl. B60t *11/34*
U.S. Cl. 303—6 C **9 Claims**



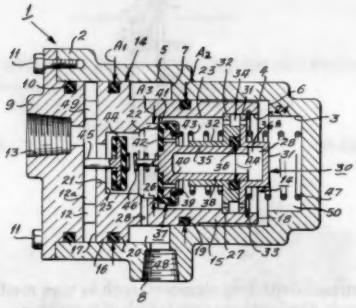
A control valve is provided with a proportioning valve generally operable to effect the application through said control valve of a reduced applied fluid pressure in a predetermined ratio with fluid pressure supplied thereto between first and second predetermined values, and another proportioning valve is movable in said first named proportioning valve and generally operable in response to supplied fluid pressures between the second predetermined value and a third predetermined value acting thereon to increase the reduced applied fluid pressure in another predetermined ratio, said other proportioning valve being responsive to supplied fluid pressure acting thereon in excess of the third predetermined value to blend the supplied and applied fluid pressures.

3,776,603

CONTROL VALVE

Richard C. Bueler, Des Peres, Mo., assignor to Wagner Electric Corporation, Newark, N.J.

Filed July 17, 1972, Ser. No. 272,308
Int. Cl. B60t 11/34
U.S. Cl. 303—6 C 25 Claims



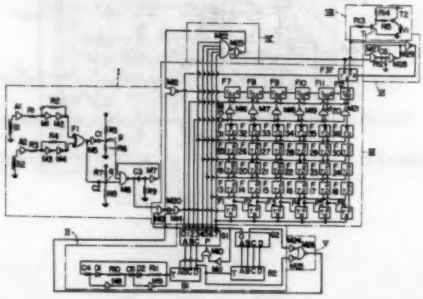
A control valve for varying brake pressures applied to front vehicle brakes includes a differential piston having ratio changing valve means therein.

3,776,604

DIGITAL TYPE BRAKE CONTROL DEVICE

Junichiro Ooya; Koji Oomura; Katsuki Takayama, and Kazutaka Kuwana, all of Kariya, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya-shi, Japan

Filed Dec. 30, 1971, Ser. No. 214,056
Claims priority, application Japan, Dec. 30, 1970, 45/129138; Dec. 30, 1970, 45/129139; Dec. 30, 1970, 45/129140; Dec. 30, 1970, 45/129141; Dec. 30, 1970, 45/129142
Int. Cl. B60t 8/08
U.S. Cl. 303—21 EB 13 Claims



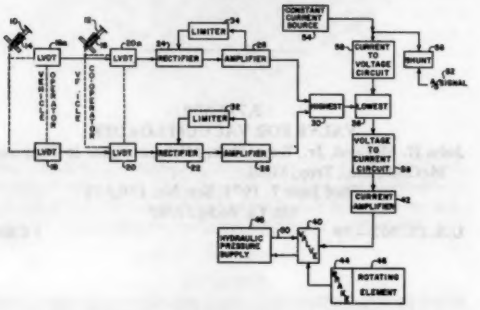
Digital type brake control devices, each comprising a suitable combination of a first block adapted to detect rotational conditions of rotating wheels, a second block comprising a clock pulse circuit and producing a control signal, a third block comprising a computation circuit, a fourth block comprising a sensing pulse difference setting circuit, a fifth block comprising a compensation circuit for compensating a pulse difference computation, a sixth block comprising a circuit for limiting time period of a pressure reducing signal, and a seventh block comprising a circuit for driving a valve adapted to reduce brake oil pressure, said blocks being connected and arranged so that number of pulses obtained by the first block is counted in accordance with the control signal produced by the clock pulse circuit of the second block and the brake pressure is controlled by the circuit of the seventh block through the circuit of the sixth block in accordance with signals obtained by the circuit of the third and fourth blocks. In the above improved devices, a "nand" element is further connected in the clock pulse generating circuit or a circuit for limiting time period of the pressure reducing signal thereby to provide a circuit adapted to limit the time period of the pressure reducing signal.

3,776,605

ELECTRICALLY CONTROLLED BRAKING SYSTEM

Edgar J. Ruof, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 877,794, Nov. 18, 1969, abandoned.
This application Oct. 18, 1971, Ser. No. 189,832
Int. Cl. B60t 8/00
U.S. Cl. 303—21 A 5 Claims



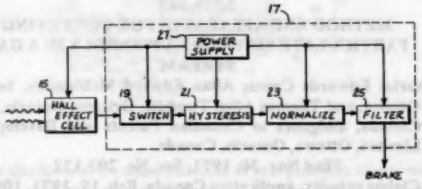
The invention relates to an improved means of braking and providing anti-skid control for vehicles by utilizing electronics between the brake pedal and the electro-hydraulic valve which serves the dual function of braking and anti-skid control. The anti-skid signal comes from normal anti-skid circuits. The brake pedal is manually controlled, and it operates against the spring force to develop an electrical signal directly proportional to the actuation. The signal produced by the anti-skid circuits is inversely proportional to the degree of skid of the wheels. The two signals are compared and the lower of the two is selected and drives the electro-hydraulic valve to control the hydraulic pressure to the brake.

3,776,606

FREQUENCY TO VOLTAGE CONVERTER EMPLOYING HALL EFFECT CELL WITH SIGNAL HYSTERESIS AND NORMALIZING

L. Frank Emerson, Williamsport, Pa., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 13, 1972, Ser. No. 262,344
Int. Cl. B60t 8/08
U.S. Cl. 303—21 CF 6 Claims



Frequency to voltage converter apparatus suitable for use in wheeled vehicle anti-skid devices includes a source of mag-

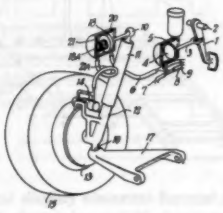
netic flux varying between upper and lower levels at a rate representative of vehicle wheel speed with a Hall effect cell device responsive to the rate of upper and lower flux variation to provide varying electrical signals which are applied by electrical circuitry to a braking system for effecting control of the wheel speed.

3,776,607

BRAKING SYSTEMS

Howard Kenneth Alderton, Sutton, England, assignor to Cam Gears Limited, Hitchin, Hertfordshire, England

Division of Ser. No. 12,092, Feb. 17, 1970, Pat. No. 3,695,733.
This application Feb. 2, 1972, Ser. No. 222,880
Int. Cl. B60t *8/18*
U.S. Cl. 303—22 R 5 Claims



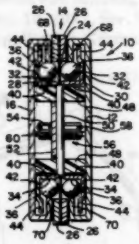
A braking system in which pressure from a master cylinder acting in slave cylinders at the brakes carries initial or low-force braking dependent on the driver's pedal force, there being a mechanical feed-back mechanism which increases the braking pressure in accordance with the mechanical force resulting from brake reaction in the vehicle, e.g. torque or drag. The hydraulic braking force is therefore augmented by fed-back force and in that sense provides a servo effect.

3,776,608

CIRCULATING BALL BEARING SLIDE

Herbert S. Fall; Martin K. Fall; Maxwell S. Fall; Charles E. Scalf; Ronald D. Lambert, and William D. York, all of Indianapolis, Ind., assignors to Herbert S. Fall, Indianapolis, Ind.

Filed Jan. 5, 1973, Ser. No. 321,535
Int. Cl. F16c *29/00*
U.S. Cl. 308—3.8 21 Claims



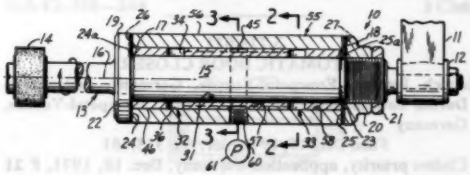
A slide assembly comprising a relatively fixed elongated track member, a relatively movable elongated track member, and an intermediate elongated track member movable relative to the fixed and movable track members. The intermediate track member provides, at each of its upper and lower longitudinal edge portions and on opposite sides of a vertically and longitudinally extending center plane, longitudinally extending ball bearing raceways. End pieces at each end of the intermediate member provide a ball bearing passageway communicating between one of the upper raceways and the lower raceway on the opposite side of the center plane and another passageway communicating between the other upper raceway and the other lower raceway on the opposite side of the plane. Ball bearings substantially fill the raceways and their communicating passageways, and the fixed and movable track members include runner portions extending respectively into and engaging the ball bearings in the adjacent upper and lower raceways.

3,776,609

FLUID-STABILIZED SHAFT

Edmond A. Pichette, 14304 San Feliciano Dr., La Mirada, Calif.

Filed July 13, 1972, Ser. No. 271,552
Int. Cl. F16c *17/16*
U.S. Cl. 308—9 7 Claims



A fluid-stabilized shaft assembly wherein the shaft can move axially and/or rotationally under substantial side loads without requiring supplemental lubrication, and without galling. An external, circularly cylindrical bearing surface is provided on the shaft, and the shaft fits with a clearance in a geometrically similar bearing surface in a sleeve. The sleeve is shrink-fitted into a housing so that its outer wall bears against an inner wall of the housing. One of these walls includes a fully peripheral supply groove which receives fluid that is used to stabilize the shaft. A group of restrictor passages of equal length and like cross-sections extend from the supply groove to individual members of two axially spaced-apart sets of balance chambers. The balance chambers open through the bearing surface of the sleeve, and discharge fluid which is received from the supply groove through the respective ones of the restrictor passages, thereby to provide lateral balancing forces which stabilize the shaft. The bearing surface on the inside of the sleeve is cylindrical and uninterrupted between the sets of balance chambers and also for substantial and equal distances on opposite sides of the two sets of pressure chambers.

3,776,610

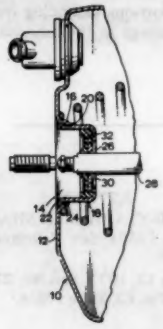
SERVO MOTORS

Dennis Francis Harvey, Birmingham, England, assignor to Girling Limited, Birmingham, England

Filed July 26, 1971, Ser. No. 165,907
Claims priority, application Great Britain, Aug. 6, 1970, 37,952/70
Int. Cl. F16c *33/74*
U.S. Cl. 308—3.5 5 Claims

A housing for servo motors for vehicle braking systems is disclosed having an easily fabricated housing member in the

end wall of the housing for carrying output rod sealing means. The housing member has an annular lip which cooperates with



an annular lip on the end wall of the housing and forms a location therebetween to house a second seal.

3,776,611

AUTOMATIC DOOR CLOSER

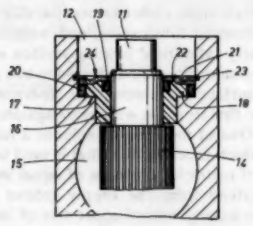
Dietrich Jentsch, Ennepetal-Voerde, Germany, assignor to Dorma Baubeschlag GmbH & Co., KG, Ennepetal-Voerde, Germany

Filed Dec. 15, 1972, Ser. No. 315,481

Claims priority, application Germany, Dec. 18, 1971, P 21 63 095.5

Int. Cl. F16c *33/74*

U.S. Cl. 308—36.1 **4 Claims**



The shaft of an automatic door closer, to which a door is to be connected, is mounted in a bearing bushing located in a bore of the oil filled housing of the door closer. A pair of sealing rings, held in place by releasable means, seal the shaft with respect to the bushing and the latter with respect to the housing bore.

3,776,612

PRODUCTION OF COMPOSITE MATERIALS

John Barlow, Willenhall, England, assignor to G.K.N. Group Services Limited, Smethwick, Warley, England

Filed July 22, 1971, Ser. No. 165,303

Claims priority, application Great Britain, July 29, 1970, 36,652/70; Sept. 22, 1970, 44,972/70

Int. Cl. F16c *27/00*

U.S. Cl. 308—238 **9 Claims**

A bearing material comprising a metal matrix reinforced with less than 50 percent by volume fibres is disclosed. Preferably the fibres comprise 10 to 25 percent by volume of the bearing material and may be carbon or asbestos fibres whilst the matrix may be lead, a lead/tin alloy or silver.

The bearing material may be provided with a steel backing strip to form a thin wall bearing component.

3,776,613

GAS-DISCHARGE DISPLAY PANEL

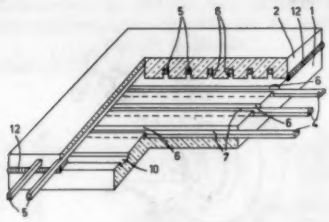
Johannes Van Esdonk; Jacobus Hubertus Jacobs; Johannes Petrus Hornman, and Wilhelmus Johannes Van de Laar, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 120,103, March 2, 1971, abandoned. This application Aug. 31, 1972, Ser. No. 285,477

Claims priority, application Netherlands, Mar. 20, 1970, 7003971

Int. Cl. H01j *9/38*

U.S. Cl. 316—20 **2 Claims**



A method of making a gas-discharge panel comprising etching discharge cavities and interconnecting channels between the discharge cavities out of strip-shaped electrodes embedded in insulating plates. The channels are etched beneath the surface of the insulating plate to depths which do not allow a discharge in one cavity to strike a discharge in adjacent cavities.

3,776,614

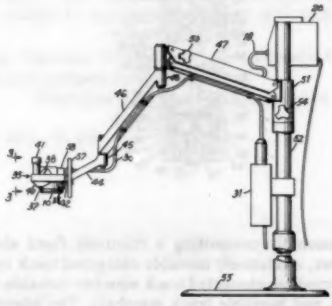
MICROSCOPE WITH REMOTE IMAGE SYSTEM

Jacobus Kloots, Sturbridge, and Rato Buhler, Brimfield, both of Mass., assignors to Applied Fiberoptics and Scientific Specialties, Inc., Southbridge, Mass.

Filed Mar. 1, 1972, Ser. No. 231,191

Int. Cl. G02b

U.S. Cl. 350—35 **3 Claims**

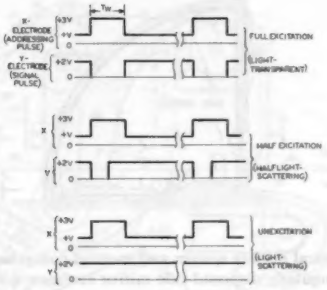


A long-viewing-distance microscope is disclosed having a single objective lens utilized by a plurality of optical systems facing the objective lens in parallel so as to be focused to the same viewing spot, one of the optical systems including a coherent fiber-optics cable for providing a remote image.

3,776,615
LIQUID CRYSTAL DISPLAY DEVICE

Masahide Tsukamoto, Katano-shi, and Tetsuro Ohtsuka, Takatsuki-shi, both of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed June 2, 1972, Ser. No. 259,301
Claims priority, application Japan, June 2, 1971, 46/38
Int. Cl. G02f 1/16
U.S. Cl. 350—160 LC 7 Claims



Liquid crystal display elements formed at intersections of strip-shaped X-electrodes and Y-electrodes are actuated so as to display images. The liquid crystal mixture used consists essentially of a nematic liquid crystal having a positive dielectric anisotropy, a nematic liquid crystal having a negative dielectric anisotropy and a steroidal compound of a certain group. This liquid crystal mixture has a threshold value and is light-transparent upon application of a voltage above said threshold value. Each of said X-electrodes is sequentially addressed by an addressing pulse having a pulse height of about 2V and as biased by a d.c. bias voltage V from a standard level and having a duration Tw, said d.c. bias voltage V being below said threshold value. A signal pulse is supplied to each of said Y-electrodes, said signal pulse having a polarity opposite to that of said addressing pulse and a duration up to Tw and being biased by a d.c. bias voltage 2V from said standard level.

3,776,616
COHERENT OPTICAL MULTICHANNEL CORRELATOR

Nikolaos Douklias, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

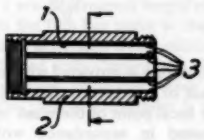
Filed Oct. 10, 1972, Ser. No. 295,998
Claims priority, application Germany, Nov. 22, 1971, P 21 578 75.6
Int. Cl. G02b 5/18
U.S. Cl. 350—162 SF 7 Claims

A coherent optical multichannel correlator having a plurality of channels of coherent light beams for permeating an object to be identified, a Fourier transmission lens receiving the light permeating the object, a number of filter holograms disposed on a focal plane of the transformation lens and one or more photo detectors for receiving the output of the filter holograms characterized by providing a matrix of controllable optical switches between the Fourier transformation lens and the photo detectors for sequentially blocking and passing selected channels to reduce background noise from cross correlation of adjacent channels. The matrix of optical switches can be an arrangement of mechanically actuated light shutters or a matrix of electro-optical polarization switches.

3,776,617
METHOD OF PROVIDING THE CYLINDRICAL INNER SURFACE OF A LENS MOUNT WITH ROLLS AND LENS MOUNT PROVIDED THEREWITH

Ernst Strauch, Waldgirmeser Strasse 37, Naunheim, and Gerhard Bleier, Ludwig-Rinn-Strasse 18, Atzbach, both of Germany

Division of Ser. No. 207,038, Dec. 13, 1971. This application Apr. 5, 1973, Ser. No. 348,230
Int. Cl. G02b 7/02
U.S. Cl. 350—245 3 Claims

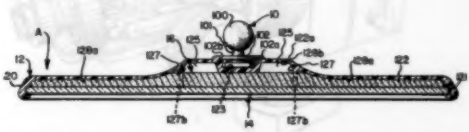


Into the inner surface of a cylindrical lens mount grooves are pressed by means of a roller member so that the material on either side of the groove folds from the general level of the surface into the interior space and forms rolls. The diameter between the rolls is then calibrated to the exact size and the lenses, lens elements and pre-mounted lenses are supported on the rolls.

3,776,618
SHATTER-PROOF REAR VISION MIRROR ASSEMBLY FABRICATION

Ronald C. Perison, Sr., East Aurora, N.Y., assignor to Standard Mirror Company, Inc., Buffalo, N.Y.

Filed Mar. 6, 1972, Ser. No. 232,117
Int. Cl. G02b 5/08
U.S. Cl. 350—288 8 Claims



A shatter-proof rear vision mirror assembly is fabricated from a pre-formed plastic casing molded with a mounting in situ and having a cavity into which is poured a self-foaming liquid prior to closing of the cavity by installation of a mirror panel, whereupon the casing and panel act as a mold in which the liquid foams to form a foamed in situ backing filling the cavity between and bonded to both the casing and panel.

3,776,619

OPHTHALMOSCOPE WITH INTERCONNECTED ILLUMINATION AND LENS CARRIER SYSTEMS

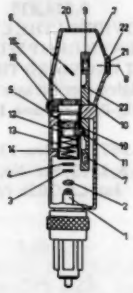
Helmut A. Heine, Herrsching/Obb., Germany, assignor to Propper Manufacturing Co., Inc., Long Island City, N.Y. and Optotechnik Heine KG, Herrsching Obb., Germany, part interest to each

Filed Nov. 20, 1972, Ser. No. 308,253

Claims priority, application Germany, Apr. 18, 1972, P 22 18 681.8

Int. Cl. A61b 3/12

U.S. Cl. 351—12 10 Claims



An ophthalmoscope is provided with an illuminating system including a mask or test pattern for projection on the fundus of the eye. The focal point of the mask or test pattern is automatically adjusted in accordance with the viewing lens selected such that the focal point of the pattern corresponds to the focal length of the lens thereby insuring a sharp image of the mask or test pattern on the fundus once the proper lens has been selected.

3,776,620

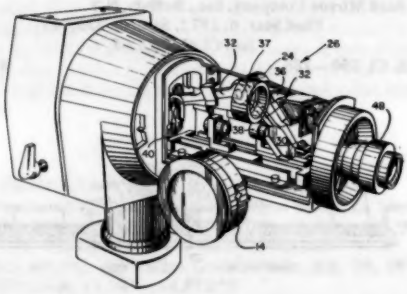
OPTHALMOMETER HAVING ALTERNATIVE VIEWING AND MEASURING SYSTEMS

Joseph C. Dianetti, East Aurora, and Krishnaiyer Swaminathan, Buffalo, both of N.Y., assignors to American Optical Corporation, Southbridge, Mass.

Filed Nov. 29, 1972, Ser. No. 310,298

Int. Cl. A61b 3/10; G01b 9/00; F21v 33/00

U.S. Cl. 351—13 10 Claims



Ophthalmometer including a measuring circuit for measurement of the curvature of the cornea and contact lens curvatures with a built-in viewing circuit which is activated by the movement of a lever to allow visible inspection of the cornea and contact lenses. A interference ultraviolet filter in communication with a single light source permits the cornea to be viewed under ultraviolet light as well as ordinary visible light.

3,776,621

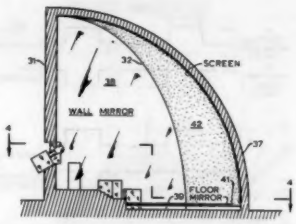
OPTICAL DISPLAY SYSTEM AND METHOD FOR CREATING A THEATRICAL ILLUSION

Donovan Worland, San Francisco, Calif., assignor to Walter Landor Associates, San Francisco, Calif.

Filed May 24, 1972, Ser. No. 256,428

Int. Cl. G03b 37/00

U.S. Cl. 352—85 11 Claims



An optical display system and method comprises provision of two angularly disposed side mirror surfaces, a bottom mirror surface angularly disposed with respect to the side mirror surfaces, and a projection sceeen angularly disposed with reference to such mirror surfaces. An image projected on the screen provides an object which because of the mirror arrangement creates a plurality of virtual images.

3,776,622

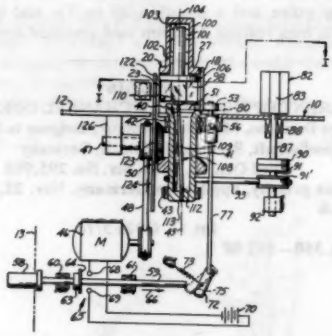
SEQUENTIAL PICTURE APPARATUS WITH CONTINUOUS FILM FEED

Lewis B. Browder, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Continuation-in-part of Ser. No. 127,113, March 23, 1971. This application Oct. 6, 1972, Ser. No. 295,750

Int. Cl. G03b 41/04

U.S. Cl. 352—119 23 Claims



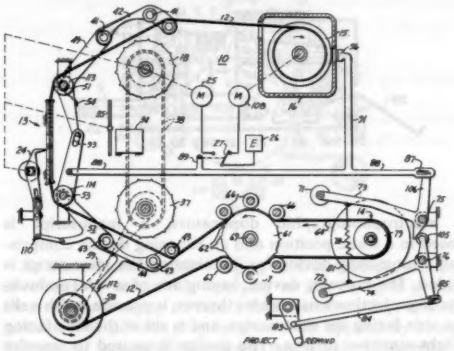
A sequential picture apparatus, such as a motion picture camera, projector, viewer or scanner, or a microfilm reader, employs a film drive for continuously moving a film. The continuous film motion is compensated by a rotary prism having a predetermined overall diameter and a plurality of facets and having a first axis of rotation. The film is guided adjacent the rotary prism with the film sequentially facing the facets of the prism at the film guiding path. A rotary prism drive device has an effective diameter smaller than the overall diameter of the prism and has a second axis of rotation spaced from the first axis of rotation. The first axis of rotation of the prism extends through the rotary film drive means. The prism drive device is placed into driving engagement with the film adjacent the prism. The prism drive device continuously rotates the prism at the same angular velocity as the prism drive device whereby the prism is driven to compensate the continuous film motion.

3,776,623

RAPID REWIND SOUND MOTION CAMERA OR PROJECTOR

Lewis B. Browder, Altadena, Calif., assignor to Bell & Howell Company, Chicago, Ill.

Filed Feb. 28, 1972, Ser. No. 229,948
Int. Cl. G03b 23/00
U.S. Cl. 352—124 12 Claims



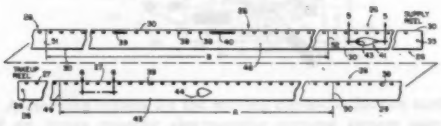
Rapid rewind of a sound motion picture film in a sound motion picture camera or projector is facilitated by the use of a free-running sprocket wheel that is in engagement with the motion picture film on both sides of the sound transducer. During advancement of the film at normal speed, the sprocket wheel cooperates with a film tensioning device in maintaining the film in engagement with a rotary mechanical filter at the sound transducer. During rapid rewind, the tensioning device is released and the sprocket wheel helps to maintain the film spaced from the rotary mechanical filter.

3,776,624

PHOTOGRAPHIC CASSETTE FOR MAKING AND STORING TRANSPARENCIES INCORPORATING PROGRAMMED FILM STRIP WITH OPAQUE REFLECTIVE SEGMENTS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed June 9, 1972, Ser. No. 261,168
Int. Cl. G03c 11/00
U.S. Cl. 352—130 14 Claims



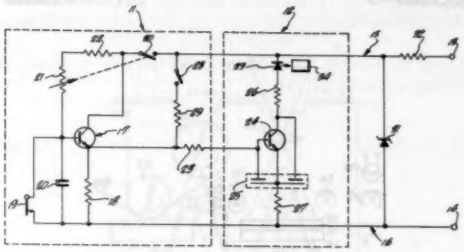
A photographic film cassette for making and storing projectable transparencies and comprising a strip of film extending through a film gate, a supply of processing composition, and a processor for applying the processing composition to the film upon manipulation of the film in the cassette. The film strip is programmed to direct the sequence of maniuplations that will expose, process, project and rewind it, and comprises chemically inert reflective portions for inhibiting the projection of blank frames.

3,776,625

CONDITION RESPONSIVE ALERT SIGNAL FOR A MOVIE CAMERA

Gerald F. Fountain, Santa Monica, Calif., assignor to Ponder & Best, Inc., Santa Monica, Calif.

Filed July 27, 1972, Ser. No. 275,689
Int. Cl. G03b 1/60
U.S. Cl. 352—170 13 Claims



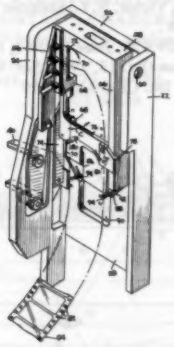
Circuitry for producing an alert signal for notifying a camera operator that a pre-determined length of time for filming has expired or that the film has come to the end of a reel. The alert signal is usually generated by an audio oscillator taking the form in a preferred embodiment of a single transistor ceramic transducer element oscillator. Also a visual alert signal observable in the camera viewfinder is disclosed.

3,776,626

FILM ADVANCING AND POSITIONING APPARATUS

John Hopkins Lewis, Teaneck, N.J., assignor to Columbia Pictures Industries, Inc., New York, N.Y.

Filed Feb. 15, 1972, Ser. No. 226,436
Int. Cl. G03b 1/22
U.S. Cl. 352—194 15 Claims

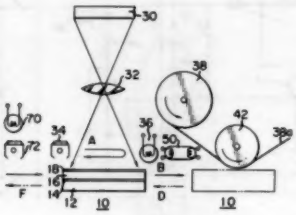


Optical gate device wherein film advancement and positioning is controlled by pull down and registration pins mounted on a shuttle arm which swings in one direction to project the pull down pins into film sprocket holes while withdrawing the registration pins for film advancement, and which swings in the opposite direction to project the registration pins into the film sprocket holes while withdrawing the pull down pins for fine positioning of the film. Liquid immersion arrangements for the film passing through the device are also described.

3,776,627
ELECTROPHOTOGRAPHIC APPARATUS USING PHOTOSENSITIVE MEMBER WITH ELECTRICALLY HIGH INSULATING LAYER

Nasaru Ohnishi, and Michi Yoshizawa, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,827
Claims priority, application Japan, Nov. 16, 1971, 46/91755
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **6 Claims**

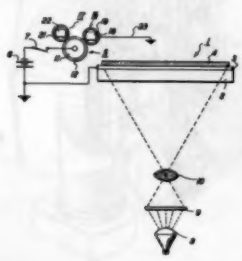


The disclosed photosensitive member comprises a supporting substrate, an electrode, a visible photoconductive layer and a thin layer of an electrically high insulating material which is transmissive to visible light, and is photoconductive in the ultraviolet range. The insulating layer is irradiated with visible light from an object to be reproduced and is simultaneously charged with a predetermined polarity through corona charging to form an electrostatic latent image corresponding to the object on the insulating layer. After the electrostatic image undeveloped or developed, has been transferred to a record medium, the electrostatic image left on the insulating layer is erased by irradiation with ultraviolet radiation.

3,776,628
PHOTOELECTROPHORETIC IMAGING SYSTEM

Robert W. Gundlach, Victor, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 829,624, June 2, 1969, Pat. No. 3,639,224.
This application Oct. 15, 1971, Ser. No. 189,729
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 **1 Claim**

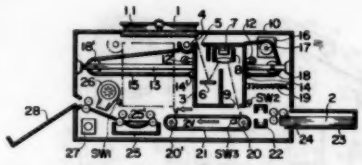


A photoelectrophoretic imaging system is disclosed wherein a thermoconductive material such as polyethylene is used as the blocking electrode of the system. The thermoconductor is heated to discharge static electricity accumulated on its surface and cooled to restore its high insulating property. The heating and cooling is accomplished by using heated rollers, gas streams and infrared radiation.

3,776,629
ELECTROPHOTOGRAPHIC DUPLICATOR

Masaya Ogawa, Osaka, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka-shi, Japan

Filed Sept. 1, 1971, Ser. No. 176,903
Claims priority, application Japan, July 8, 1971, 46/22189
Int. Cl. G03g *15/04*
U.S. Cl. 355—8 **5 Claims**

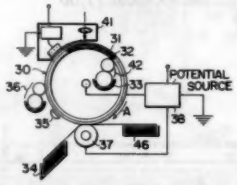


In electrophotographic duplicators, a manuscript is disposed in a static position and an exposing device comprising an illuminating device for illuminating the manuscript is provided. The exposing device, having one of several embodiments of projection lens systems therein, is provided with a slit at the side facing the manuscript, and is slit at the side facing the light-sensitive surface. The device is caused to transfer parallel to the manuscript at a constant linear speed, and the light-sensitive surface is caused to transfer parallel to the manuscript in the same direction at a linear speed twice the transfer speed of the exposing device to form an electrostatic latent image on the light-sensitive sheet. The duplicating speed is made to be twice the speed of exposure sequentially, and operations such as succeeding development, transfer and the like can be effected at the duplicating speed.

3,776,630
ELECTROSTATIC PRINTING METHOD AND APPARATUS

Genji Ohno, Yokohama, and Eiichi Inoue, Tokyo, both of Japan, assignors to Research and Development Laboratories of Ohno Co., Ltd., Yokohama-shi, Japan

Filed Mar. 10, 1972, Ser. No. 233,547
Claims priority, application Japan, Mar. 29, 1971, 46/17940
Int. Cl. G03g *15/10*
U.S. Cl. 355—10 **9 Claims**



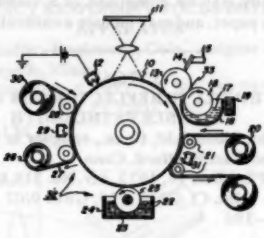
Apparatus is disclosed for electrostatically printing, comprising a photosensitive plate composed of a conductive substrate having fine pores distributed uniformly all over the surface thereof and a liquid-repellent photoconductive layer coating the surface of the substrate except the part of the pores. An electrostatic latent image is formed on the photoconductive layer, and a liquid developer is supplied from the back side of the photosensitive plate. Next, a voltage is applied between the plate and an opposing electrode contacting a paper to be printed, disposed in an opposing relation to the plate so that the latent image is developed and transferred to the paper.

3,776,631

LIQUID DEVELOPER CLEANING SYSTEM

Joseph Mammino, Penfield, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 878,495, Nov. 20, 1969, Pat. No. 3,656,948. This application Dec. 13, 1971, Ser. No. 207,651
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 16 Claims



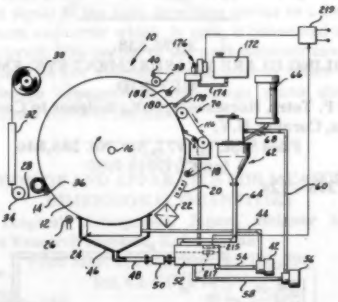
An electrostatographic imaging surface is cleaned of liquid developer by selectively applying to the charged or image areas of the imaging surface a finely divided, dry, absorbent powder. The powder may be selectively applied by charging the powder to a polarity opposite that which the imaging surface bears and presenting a charged powder loaded applicator adjacent the imaging surface such that the charged powder is transferred to the imaging surface with an electrostatic assist from the residual charge on the imaging surface.

3,776,632

CLEANING MECHANISM FOR PHOTOCONDUCTIVE SURFACES

Ian E. Smith, Lockleys; Peter J. Hastwell, Elizabeth Grove, and Marinus C. Vermeulen, Valley View, all of Australia, assignors to Savin Business Machines Corporation, Valhalla, N.Y.

Filed Feb. 24, 1972, Ser. No. 228,873
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 18 Claims



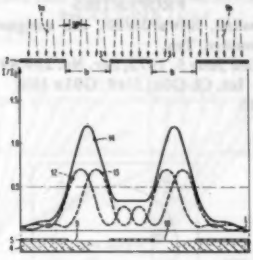
A cleaning system for the moving photoconductive surface of an image transfer electrostatic copying system using a developer made up of toner particles and a liquid carrier in which a cleaning belt with a rough surface is constrained to cause an area of the belt surface to contact the photoconductive surface at a location past the image transfer station with the belt being driven in a direction opposite to the direction of movement of the photoconductive surface and with clear carrier liquid being metered across the photoconductive surface just ahead of the cleaning belt at a rate which is approximately equal to the rate at which the carrier liquid evaporates from the developer. Preferably the belt is reciprocated transversely and preferably the photoconductive surface is flooded with light as it leaves the image transfer station.

3,776,633

METHOD OF EXPOSURE FOR GHOST LINE SUPPRESSION

Albert Frosch, and Arno Schmackpfeffer, both of Boeblingen, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 10, 1972, Ser. No. 225,224
Claims priority, application Germany, Apr. 6, 1971, P 21 16 713.5
Int. Cl. G03c *5/00*
U.S. Cl. 355—132 10 Claims



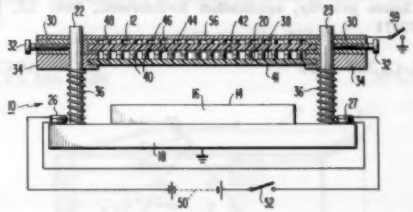
A photographic method and apparatus for exposing a light sensitive layer using a mask spaced from said layer while avoiding "ghost lines" due to diffraction effects in the developed pattern on the layer. The mask is illuminated by pairs of collimated ray sets, either sequentially or simultaneously, at an angle relative to each other so that the constituent diffraction pattern on the light sensitive layer resulting from one ray set of a pair is shifted with respect to the constituent diffraction pattern attributable to the other ray set of the pair. The shift is such that the ratio of the "ghost line" intensity to the maximum intensity in the composite diffraction pattern is reduced relative to the corresponding ratio in each of the constituent diffraction patterns. The pairs of ray sets are produced by spacially displaced fixed light sources or by a rotating optical system using a single light source.

3,776,634

APPARATUS FOR AND METHOD OF REPRODUCING AN ELECTROSTATIC CHARGE PATTERN

Richard Williams, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 22, 1972, Ser. No. 308,839
Int. Cl. G03b
U.S. Cl. 355—133 11 Claims



An electrostatic charge pattern on an image-bearing surface is reproduced on a collector plate by means including a transfer sheet. The transfer sheet, comprising electrically insulating material, is disposed for reciprocal movement between the image-bearing surface and the collector plate. The transfer sheet is first disposed with one surface adjacent the image-bearing surface. The other surface of the transfer sheet, having a plurality of discrete dots of electrically conductive material thereon, is momentarily grounded to induce thereon an electrostatic charge whose charge density varies with the

charge pattern on the image-bearing surface. The transfer sheet is then moved to the collector plate which comprises an electrically insulating plate with a plurality of electrically conductive discrete dots thereon adapted to contact the dots on the transfer sheet. The opposite surface of the collector plate is next grounded so that the electrostatic charge pattern on the transfer sheet is transferred to the collector plate.

3,776,635

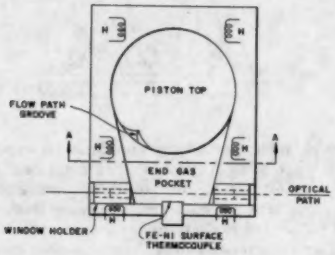
GAS TEMPERATURE MEASUREMENT USING AN ORGANIC COMPOUND HAVING STRONGLY TEMPERATURE-DEPENDENT LIGHT ABSORPTION PROPERTIES

Weston W. Haskell, Edwardsville, Ill., assignor to Shell Oil Company, Houston, Tex.

Filed June 5, 1972, Ser. No. 259,898

Int. Cl. G01j 5/48; G01n 1/00

U.S. Cl. 356—43 **7 Claims**



A method for continuously measuring rapidly changing temperatures between about 300° to 1,600° K of a gas having a relatively low light absorption at an ultraviolet wavelength, λ, by including in said gas a quantity of an organic compound which vaporizes without polymerizing, decomposing or reacting with said gas and which has strongly temperature-dependent light absorption properties at said wavelength, λ; measuring the light absorption of the gas including said organic compound at wavelength λ; and determining the gas temperature from a previously determined ultraviolet light absorption-temperature relation for the organic compound.

3,776,636

PROCESS AND APPARATUS FOR INVESTIGATING THE COHERENCE OF LIGHT RADIATION

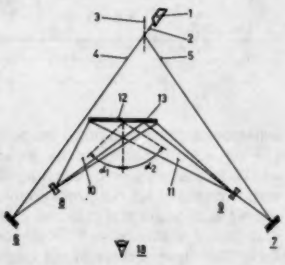
Rene Dandliker, Oberrohrdorf, and Francois Mottier, Zurich, both of Switzerland, assignors to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Feb. 22, 1972, Ser. No. 227,937

Claims priority, application Switzerland, Feb. 23, 1971, 2637/71

Int. Cl. G01b 9/02

U.S. Cl. 356—106 **10 Claims**



A process and an apparatus are disclosed for examining the mode structure or coherence of laser light beams. According to the process, the laser beam to be studied is first divided into two portions which are projected onto a diffusely scattering body in a superimposed fashion. If the laser beam is not coherent, patterns are formed on the scattering body which are visually observable. No visible interference fringes are formed if the laser beam is strictly coherent. The apparatus disclosed includes a beam splitter for dividing the laser beam into two portions, and an optical system for projecting the two beam portions onto a diffusely scattering body. The diffusely scattering body may be comprised of a variety of materials, such as white paper, and may include a calibrating scale.

3,776,637

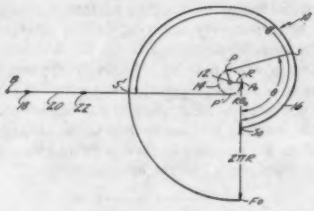
CIRCULAR INVOLUTE REFLECTOR FOR PROVIDING A VARIABLE PATHLENGTH

Richard Hecht, Bloomfield, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed Dec. 14, 1972, Ser. No. 315,039

Int. Cl. G02b 5/10; G01b 9/02

U.S. Cl. 356—106 **5 Claims**



A rotatable reflection surface in the form of a circular involute is disclosed. The reflector provides a variable pathlength for a beam of radiant energy over a range that is related to the change in radius of curvature of the involute. A general description of the physical characteristics of the reflector as well as a mathematical verification of these characteristics is provided. The reflector operation is discussed and several immediately applicable embodiments including an optical pathlength modulator, a Fourier spectrometer and an optical heterodyning receiving system are shown.

3,776,638

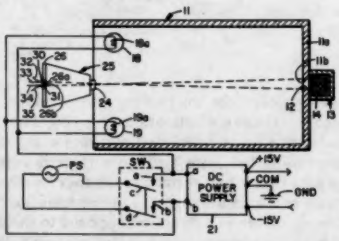
VEILING GLARE MEASUREMENT SYSTEM AND METHOD

Michael P. Teter, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 1, 1972, Ser. No. 285,846

Int. Cl. G01b 9/00

U.S. Cl. 356—124 **10 Claims**



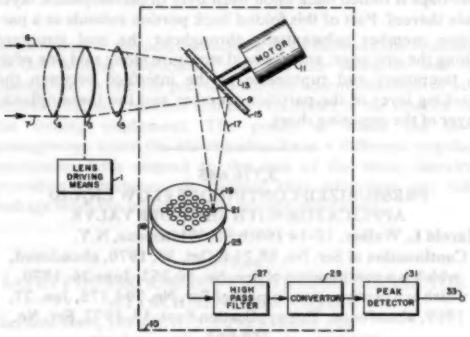
Photoelectric system and method for measuring the veiling glare from optical lens, such system comprising a pair of photosensitive devices disposed in a camera obscura and associated electrical circuitry for making a comparison measurement of light intensity striking first and second ones of the

photosensitive devices from the optical lens when held in the lens-aperture of the camera obscura and the camera obscura is focused at an illuminated reflective screen having a light trap in the vicinity of the center of the screen. An indication or visual display of the results of the comparison measurement may be given by a suitable meter, pen graph or any suitable indication device.

3,776,639
FREQUENCY RESPONSIVE FOCUS DETECTING APPARATUS

Norman L. Stauffer, Englewood, Colo., assignor to Honeywell, Inc., Minneapolis, Minn.

Filed June 5, 1972, Ser. No. 259,787
Int. Cl. G01b 9/00
U.S. Cl. 356—126 **8 Claims**

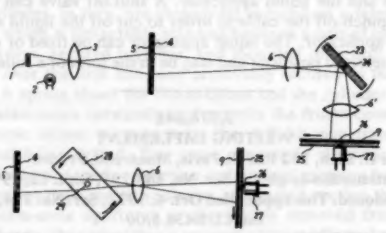


A lens device traverses a predetermined portion of a light path between an external scene and an image plane on which an image of the scene is to be focused. A wobbulating mirror effects a rotation of the image on the image plane. A light detection device comprising a mask with apertures therein and a light responsive device, is positioned at the image plane. As the image is uniformly moved over the mask, the frequency characteristic of the output signal of the light detection device varies with the degree of sharpness of the scanned image. The high pass filter passes only the high frequency components of the output signal of the light detection device to a frequency-to-magnitude converter which, in turn, is connected to a peak detector circuit. The output of the peak detector circuit is related in time to the position of the lens at which the best focused image appeared at the image plane during the predetermined travel of the lens.

3,776,640
METHOD OF AND APPARATUS FOR MEASURING DIMENSIONAL QUANTITIES

Yoshizo Ikegami, Amagasaki, Japan, assignor to Konan Camera Research Institute, Kobe, Japan

Filed Mar. 1, 1972, Ser. No. 230,598
Int. Cl. G01b 11/04
U.S. Cl. 356—160 **3 Claims**

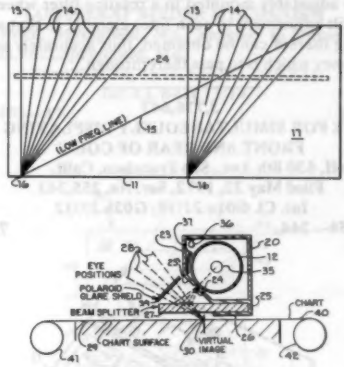


A method and apparatus for measuring dimensional quantities of articles and particularly articles in motion wherein an image of the article is formed on a patterned plate and then scanning the patterned plate and image formed thereon to produce electric pulses which are related to the dimension of the article and then counting the number of pulses.

3,776,641
OPTICAL DIVIDER POINT ASSEMBLY FOR HARMONIC SPECTRUM ANALYSIS

Marvin J. Northcutt, and Eugene R. Roeschlein, both of Indianapolis, Ind., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1972, Ser. No. 221,248
Int. Cl. G01b 11/14
U.S. Cl. 356—171 **3 Claims**

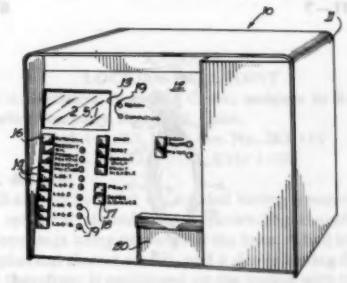


An optical divider point assembly for harmonic spectrum analysis having a cylindrical drum with one or more sets of spiral lines therearound, each set originating at a point and diverging in equal separation and rotatable within a housing having an elongated slot parallel to the drum axis to project reflected light from the spiral lines onto a supporting surface of frequency spectrums through a beam splitter plate to match the points of reflected light with frequency harmonics at the points of virtual image formation to identify same, the matched position being read out of a potentiometer position having its adjustable tap mechanically connected to rotate with the drum.

3,776,642
GRAIN ANALYSIS COMPUTER

James H. Anson, Auburn, and Donald E. O'Neal, Springfield, both of Ill., assignors to Dickey-John Corporation, Auburn, Ill.

Filed Aug. 1, 1972, Ser. No. 277,131
Int. Cl. G06f 15/20; G01j 3/48; G01n 21/48
U.S. Cl. 356—188 **30 Claims**



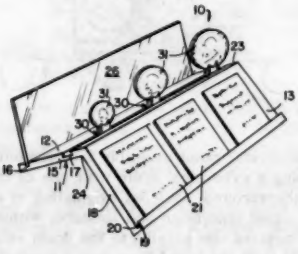
A grain analyst computer is disclosed which has a quartz-iodide lamp to provide infrared radiation which is directed

through a lens toward the surface of a quantity of grain which is to have certain constituents thereof analyzed. The infrared radiation is made parallel by the lens and then passes through selected filters so that only a specific frequency of the radiation impinges upon the grain sample, and this frequency provides a reflected radiation signal which has an amplitude corresponding to the quantity of a given constituent within the sample being analyzed. A plurality of pulse signals is then generated by a photocell which receives the reflected signals. These pulse signals are applied to a signal storage circuit and a signal computing circuit to provide a direct readout in terms of per cent of the constituents being analyzed. A reference standard element is automatically positioned in light-receiving relation with the light source so that the constants within the storage and computing circuits can be adjusted automatically prior to analyzing each grain sample. The plurality of filter elements are adjustably mounted to a rotating filter wheel which provides tilt adjustment to each filter element so that an exact positioning thereof can be obtained, thus accurately selecting the frequency which is to pass therethrough.

3,776,643
DEVICE FOR SIMULTANEOUSLY DISPLAYING THE FRONT AND REAR OF COINS

Victor Titoff, 630 8th Ave., San Francisco, Calif.

Filed May 22, 1972, Ser. No. 255,343
Int. Cl. G01n *21/16*; G02b *27/32*
U.S. Cl. 356—244 **7 Claims**



A device for simultaneous display of the front and rear sides of one or more coins comprising a base member having a mirror substantially inclined from the base member and means for holding the coins above the base member and parallel to said mirror. The means for holding the coins preferably are clip members which engage a small portion of the rim of the coins and which fit into a groove in the base member, the groove being parallel to and spaced from the mirror.

3,776,644
PACKET

Robert C. Baker, 1831 Summit Ave., St. Paul, Minn.

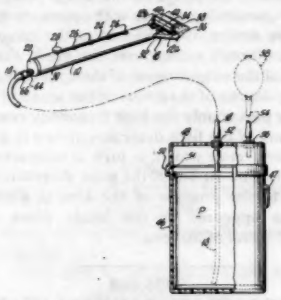
Continuation-in-part of Ser. No. 192,241, Oct. 26, 1971. This application Oct. 25, 1972, Ser. No. 300,788
Int. Cl. A46b *5/04*; B43b *3/04*
U.S. Cl. 401—7 **6 Claims**

The new composite flexible sheet material comprises a base sheet structure made up of a thermoplastic resin layer which is flowable or fusible at predetermined sealing conditions, plus a polyester backing layer non-flowable or non-fusible at said conditions. The thermoplastic layer is thicker than the backing layer. Adhered to the thermoplastic layer is a layer of polyester fibrous material not flowable or fusible at said sealing conditions. The fibrous material layer is capable of being substantially submerged into the thermoplastic layer upon the application of sealing conditions. A preferred invertible envelope-type packet is formed by using a composite sheet having a thermoplastic fusible layer and a non-fusible backing layer, and involves placing the thermoplastic layer inwardly and the backing layer on the exterior of the envelope. Opposing walls of the envelope are united along portions thereof adjacent the envelope cavity. The expanse of the sheet material forming each opposing wall extends beynnd a seal structure along one edge of the envelope cavity to form a pair of outwardly projecting ear-flaps. Sheet material forming one of the ear-flaps is folded back upon itself over th thermoplastic layer side thereof. Part of this folded back portion extends as a partition member substantially throughout the seal structure along the one edge; and this seal structure along said one edge is temporary and rupturable at the interface between the backing layer of the partition member and the thermoplastic layer of the opposing sheet.

3,776,645
PRESSURIZED CONTINUOUS FLOW LIQUID APPLICATOR WITH SHUT-OFF VALVE

Harold L. Walker, 10-14 160th St., Whitestone, N.Y.

Continuation of Ser. No. 85,764, Oct. 30, 1970, abandoned, which is a continuation of Ser. No. 50,263, June 26, 1970, which is a continuation-in-part of Ser. No. 794,175, Jan. 27, 1969, abandoned. This application Sept. 13, 1972, Ser. No. 288,862
Int. Cl. A46b *1/02*; B44d *3/28*
U.S. Cl. 401—188 **2 Claims**



A system for the application of liquid to a surface, such as by painting, washing and waxing, in which the liquid source is maintained under a constant super-atmospheric pressure and a flexible cable is connected between the pressurized liquid source and the liquid applicator. A shut-off valve can selectively pinch-off the cable in order to cut off the liquid supply to the applicator. The liquid applicator can be fixed or movable to selected positions and may be in the form of a roller.

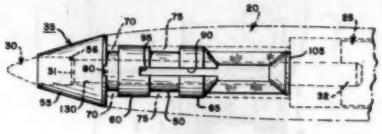
3,776,646
WRITING IMPLEMENT

Claude H. Bich, 152 Rue de Paris, Montreuil, France

Continuation-in-part of Ser. No. 288,295, Sept. 12, 1972, abandoned. This application Oct. 4, 1972, Ser. No. 294,888
Int. Cl. B43k *8/00*
U.S. Cl. 401—199 **11 Claims**

A writing implement is disclosed in which a nib holder provides a tortuous air passageway between the exterior of the

writing implement and an ink reservoir in its interior. The nib holder includes a stem, a frusto-conical tip, and at least one raised rib surrounding the stem and spaced apart from the tip. Through the center of the frusto-conical tip and stem there is a hollow passageway in which a writing nib is securely fitted. The nib holder fits into the front end of the barrel of the writing implement; and the tip, the rib, the interior of the barrel, and a portion of the stem cooperate to form a small air chamber in the writing implement. Another passageway in the



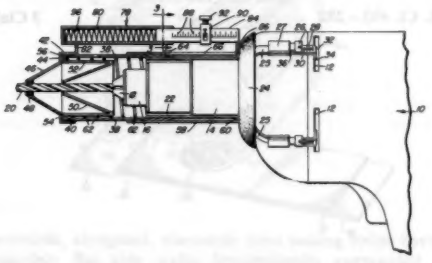
tip provides for the communication of air between the exterior of the writing implement and the air chamber and a passageway in the rib provides for the communication of air between the air chamber and the remainder of the interior of the writing implement. The points at which the two passageways enter the air chamber have a different angular orientation with respect to the axis of the stem, thereby providing a tortuous air passage that minimizes any ink leakage from the interior of the writing implement.

3,776,647

SAFETY GUARD AND DUST AND DEBRIS COLLECTOR ATTACHMENT FOR A DRILL

Herman Hart, 1078 N.W. 53rd St., Miami, Fla.

Filed Aug. 31, 1972, Ser. No. 285,507
Int. Cl. B23b *47/00*
U.S. Cl. 408—241 G **11 Claims**



This is an attachment for a drill that provides a safety guard, and a dust and debris catcher. It is in the form of a pair of frusto-cones, preferably of stainless steel, removably held in spaced apart relationship by a cylinder of similar material, providing space for the dust and debris to accumulate therebetween. The apexes of the frusto-cones are apertured to permit the drill-bit to extend therethrough. The frusto-cones and cylinder, in turn, are threadedly secured on a telescopic sleeve which is retractable into and between a pair of concentric sleeves, secured together, and mounted on a drill body, fitting over the drill hub, and removably secured to the drill body. A spring about the frusto-cones and the cylinder urges the frusto-cones outwardly and permits the frusto-cones and telescopic sleeve to retract as the drill-bit penetrates the material being drilled. The outer concentric sleeve is apertured to permit ready retraction and prevent pressure building up between the concentric sleeve, and permit suction through the frusto-cone apertures as the drill is removed from the drilled area, thus providing a vacuum cleaner effect about the drill-bit to keep the dust within the frusto-cones as the drill-bit is removed.

To empty the dust, telescoping the male sleeve back and forth will act like a blow-gun and blow out the dust and debris. A drill-bit depth-limiting and depth gauge for the drill, and in another form, a drill depth measuring gauge on the outer surface of the telescopic sleeve, is provided. Should the drill-bit break while in use, the broken parts will be trapped within the frusto-cones or concentric sleeves, preventing any injury or damage.

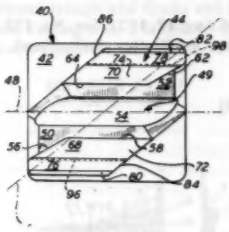
To prevent the dust from falling out, the drill-bit aperture in the outer cone when drilling downwardly, as in a floor, an internal flared pipe is detachably added to the inside of the outer frusto-cone, just slightly larger than the drill-bit, and has a flared internal flanged lip so that the major part of the dust will collect within the outer cone.

3,776,648

LOOSELEAF BINDER MECHANISM

Roy H. Price, Springfield, Mo., assignor to Litton Business Systems, Inc., Springfield, Mo.

Filed Feb. 28, 1972, Ser. No. 229,831
Int. Cl. B42f *13/14*
U.S. Cl. 402—17 **18 Claims**



A flexible post looseleaf binder having novel post hold-down slide means adapted to be easily inserted into and, if desired, removed from its retaining channel. To insert the slide means into the channel, the slide is held in a first angular position relative to the channel. In this position, the body of the slide presents to the channel top opening a maximum width not greater than substantially equal to the width of the channel opening, so that the slide can readily be inserted into the channel. After insertion, the slide is rotated to a second angular position. In this latter position, an abutment portion of the slide underlies a lateral wall portion of the channel, so that the slide is locked against accidental removal from the channel.

In a modified form, each slide is provided with a hook-like hanger extension. When the slides are moved to the outward ends of the channel, these extensions protrude outwardly beyond the binder covers, and are used to hang the binder in a file cabinet or the like. Detent structure provided on each slide holds the slide releasably latched in the foregoing end position.

3,776,649

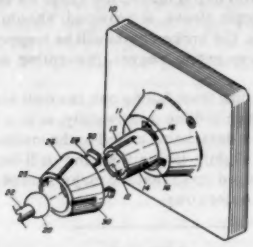
LOCKING BALL JOINT

Vincent A. Kemezys, Norwalk, Conn., assignor to Barnes Engineering Company, Stamford, Conn.

Filed Aug. 23, 1972, Ser. No. 283,119
Int. Cl. B25g *3/38*; F16c *11/06*
U.S. Cl. 403—90 **8 Claims**

A ball-and-socket joint is provided having a mounting base with a spherical slotted socket protruding therefrom, and slotted openings being provided in the base. A ball is mounted in the spherical slotted socket, and a sleeve having fingers extending therefrom is positioned on the socket with the fingers extending into the slots of the base. A sloping ramp is provided on the base near the slots therein, whereby, on rotation of the

sleeve, the fingers positioned therein are drawn up the ramp, pulling the sleeve toward the base, and clamping the ball in the



slotted joint, which is accomplished by hand movement of the sleeve. When so locked, the joint is incapable of being released by hand, and requires a special tool for release.

3,776,650

CONNECTING DEVICE

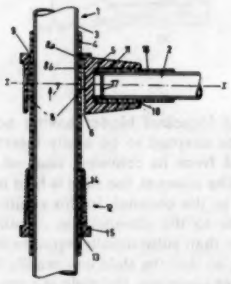
Heinrich Zenhausern, Birmensdorferstrasse 134, Urdorf, Switzerland

Filed Aug. 17, 1971, Ser. No. 172,399

Claims priority, application Switzerland, Aug. 19, 1970, 12435/70

Int. Cl. F16b *7/00*

U.S. Cl. 403—191 **1 Claim**



A connecting device for connecting together hollow members comprises a body having frusto-conically tapered bores and sleeves having bores of similar diameter to the outside diameter of members to be connected, said sleeves having complementarily tapered external surfaces for mating with the bores in said body so that a member carrying one of said sleeves can be passed through one of said tapered bores in said body and, by facing said sleeve into said tapered bore, positively connected to the body and to any other member or members similarly connected thereto.

3,776,651

HUB CONNECTION FOR USE WITH HOLLOW SHAFTS

Oskar E. Peter, Schlosstrasse 9/I, Brackenheim, and Lothar Peter, Guglingen, Wurttemberg, both of Germany, assignors to said Oskar E. Peter, by said Lothar Peter

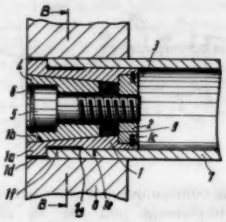
Filed Apr. 21, 1972, Ser. No. 246,199

Claims priority, application Germany, Sept. 23, 1971, P 21 47 501.4

Int. Cl. F16d *1/06*

U.S. Cl. 403—248 **9 Claims**

To secure a hub on a hollow shaft, a sleeve adapted to fit into the hollow shaft has, at one end, a cylindrical collar which is adapted to fit into the bore of the hub. The outer end of the collar has a serrated surface, and a portion of the outer surface of the sleeve, adjacent the collar, is likewise serrated, the serrations terminating in a groove, and the remainder of the sleeve being smooth. The sleeve has an inner conical surface into which a conical tension plug fits which, when tightened against a counter element, expands the sleeve and causes the serrated surfaces to bind against the inner surface of the shaft, and against the bore of the hub, respectively, the smooth surface of the sleeve centering and additionally frictionally engaging the shaft. In a preferred form, the tightening screw is an Allen head bolt which is constrained against axial movement in a recess of the plug, so that upon loosening movement of the bolt, the conical plug will disengage from the inner conical surface, and so that the connection can be released without further tools. A plastic or oil-resistant disk can be inserted between the counter elements for the bolt and the conical plugs to make the connection fluid-tight.



3,776,652

SHEET METAL JOINT

Edward Sanderson, 159 Algonquin, Park Forest, Ill.

Filed Nov. 17, 1972, Ser. No. 307,412

Int. Cl. F16b *5/07*

U.S. Cl. 403—282 **3 Claims**

A coatable or paintable joint formed between the end of a coil of sheet metal and the beginning of a coil of sheet metal comprising a hole pierced through the pieces of sheet metal to form tabs which are turned upon themselves to secure the sheet metal portions together and including a circular ridge formed on opposite sides of said sheet metal surrounding said pierced hole, each of said ridges being offset from the general plane of sheet metal pieces to protect the coating or painting rollers from damage when the joint passes over same.

3,776,653

CORRUGATED ELASTIC SHIM AND SHAFT AND HUB

Alexander S. Buzogany, Morrisville, Pa., assignor to Roller Bearing Company of America, West Trenton, N.J.

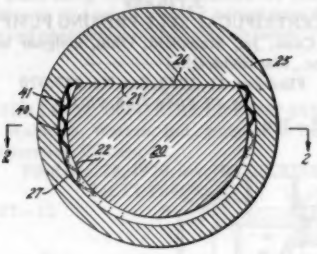
Filed Oct. 20, 1971, Ser. No. 190,968

Int. Cl. F16d *1/06*

U.S. Cl. 403—372 **5 Claims**

A corrugated elastic shim mounting for a hub on a shaft, in which the shaft and the hub have cooperating interlocks such as flats which transmit the torque, and in which the shim occu-

pies space between the hub and the shaft which is substantially less than a complete circumference, but preferably more than



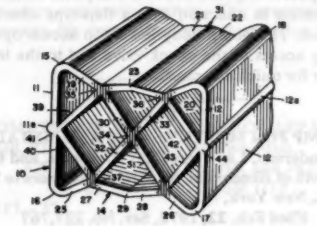
180°. The shim according to the invention is relieved of the torque transmitting function and must perform only the mounting, engaging or positioning functions.

3,776,654

EXPANSION JOINT AND BRIDGE JOINT SEALS

Delmont D. Brown, North Baltimore, Ohio, assignor to The D.S. Brown Company, North Baltimore, Ohio

Filed July 22, 1971, Ser. No. 165,162
Int. Cl. E01c *11/10*
U.S. Cl. 404—65 **6 Claims**



Invertible, elongated, elastomer joint sealing strips having substantialy flat side walls, longitudinally corrugated or pleated top and bottom walls preferably of the same general configuration, an internal web structure with one or two pairs of crossed webs connected to the top and bottom walls and additional diagonal webs extending diagonally across the four corners to provide two or three side-by-side diamond openings in internal structure of seals, and a longitudinal rib or bead on each side wall to aid symmetrical lateral collapse of the seal and also to impede inward bending or rolling of its corners.

3,776,655

CARBIDE THREAD CHASER SET AND METHOD OF CUTTING THREADS THEREWITH

Robert F. Urbanic, Willowick, Ohio, assignor to The Pipe Machinery Company, Willowick, Ohio

Division of Ser. No. 887,457, Dec. 22, 1969, Pat. No. 3,629,887. This application Sept. 7, 1971, Ser. No. 178,388
Int. Cl. B23g *1/00, 5/04*
U.S. Cl. 408—1 **2 Claims**

A set of multitooth thread chasers with their teeth shaped and arranged to perform a succession of central roughing cuts of approximately trapezoidal cross section, respectively, and of successively decrescent areas. The chasers are free from any portions which can cause flanking cuts which result in lateral flanges on the resultant chips. The cut produced by each tooth extends close to, but terminates a few thousandths of an inch short of, the flanks of two adjacent threads so that, in the final rough cut thread, a very thin layer of metal remains

between the rough cut thread surface and the thread finish lines, and this layer is continuous and uninterrupted along the entire final rough cut thread surface.

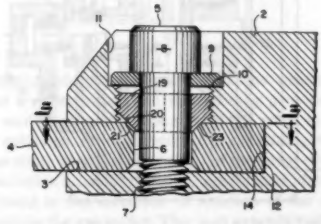
This layer is removed by a single finishing tooth which makes a single finish cut concurrently cutting a portion of one crest, along the thread trough and flanks and a portion of the adjacent crest, thus cutting over a length of thread cross section equivalent to one complete thread.

3,776,656

SPADE DRILL

Milton L. Benjamin, Chagrin Falls, Ohio, assignor to Erickson Tool Company, Solon, Ohio

Filed Sept. 25, 1972, Ser. No. 291,947
Int. Cl. B23b *41/00*
U.S. Cl. 408—233 **6 Claims**



A spade drill characterized in that the slotted end of the holder in which the spade drill blade is clamped by a clamping screw extending through a hole in the blade has a set screw therein coaxially disposed with respect to the clamping screw and adjacent to the head thereof, said set screw being disposed eccentrically with respect to the blade hole and having a tapered end which engages one side of the blade hole thus to retain the blade in seating engagement with the bottom of the holder slot when the spade drill is retracted from the drilled hole.

ERRATUM

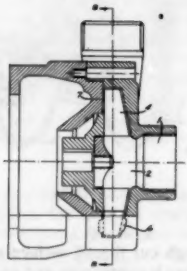
For Class 408—241 see:
Patent No. 3,776,647

3,776,657

SELF-PRIMING HIGH-PRESSURE PUMP

Emil Julius Ask, Farresfjorden Aksnes, Haugesund, Norway

Filed Dec. 29, 1971, Ser. No. 213,491
Claims priority, application Norway, Jan. 6, 1971, 22
Int. Cl. F04d 5/00
U.S. Cl. 415—53 2 Claims



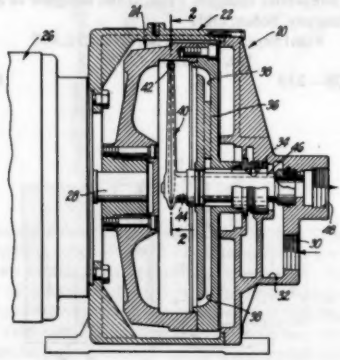
The outlet of the pump housing has an increasing area and extends as a side-channel into the pump housing around a part of the periphery of the rotating impeller in such a way that direct communication exists between the side-channel and the inlet of the pump housing.

3,776,658

PITOT TUBE FOR PITOT PUMP

John W. Erickson, Huntington Beach, Calif., assignor to Kobe, Inc., Huntington Park, Calif.

Filed Aug. 14, 1972, Ser. No. 280,677
Int. Cl. F04d 1/12
U.S. Cl. 415—88 8 Claims



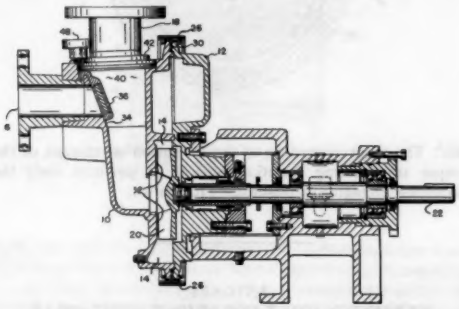
A pitot tube for a pitot pump, i.e., a centrifugal pump comprising a rotary casing, means for delivering a fluid to be pumped to the rotary casing, and a discharge duct coaxial with the rotary casing. The pitot tube is disposed in and extends radially of the rotary casing and is provided adajcent its outer end with an inlet facing in a direction opposite to the direction of rotation of the rotary casing, whereby the inlet receives fluid from adjacent the periphery of the rotary casing with a ram effect. The pitot tube includes axially spaced side walls and is provided adjacent its inner end, and in one of such side walls, with an outlet communicating with the discharge duct and coaxial with the rotary casing. Within the pitot tube is a flow splitting vane which extends from one side wall to the other, such vane extending from adjacent the outlet to adjacent the outer end of the pitot tube and dividing the pitot tube into two compartments spaced apart circumferentially of the rotary casing, one compartment being adjacent the leading edge of the pitot tube and the other adjacent the trailing edge thereof. This vane has the effect of streamlining the fluid flow through the outlet of the pitot tube and into and through the discharge duct, thereby minimizing flow losses.

3,776,659

CENTRIFUGAL SELF-PRIMING PUMP

Donald F. Coon, Jr., Mansfield, Ohio, assignor to Peabody Barnes Inc., Mansfield, Ohio

Filed Jan. 11, 1972, Ser. No. 217,070
Int. Cl. F04d 7/06, 9/02
U.S. Cl. 415—200 1 Claim



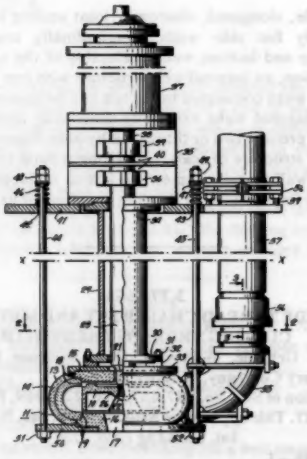
A self-priming, centrifugal pump having a pump body formed of two, separate, coacting matched half shells releasably retained together by a retaining ring clamp secured by a single bolt, whereby release of such bolt enables complete disassembly of the pump body for quick, easy access to all interior pump parts. One body shell contains an easily replaceable wear plate disposed opposite the pump impeller. The pump inlet port is disposed above the impeller centerline to effect self-priming in coaction with a flap-type check valve at the inlet port. The pump body has a top access opening permitting easy access to the check valve and to the inlet eye of the impeller for quick cleanout.

3,776,660

PUMP FOR MOLTEN SALTS AND METALS

Loren E. Anderson, Las Vegas; Roy E. Adams, and Gordon D. Weese, both of Henderson, all of Nev., assignors to NL Industries, Inc., New York, N.Y.

Filed Feb. 22, 1972, Ser. No. 227,767
Int. Cl. F04d 7/02, 7/06
U.S. Cl. 415—196 7 Claims



A pump comprising a refractory body portion of oblate spheroidal configuration having apertures in the top and bot-

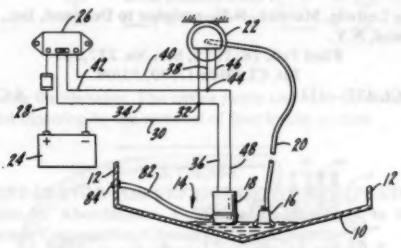
tom thereof is provided with refractory covers for said apertures which covers are held securely in said apertures by upper and lower metal plates, respectively, the upper plate forming the base of a vertical housing for the pump impeller shaft and the lower plate being resiliently mounted for vertical movement relative to said upper plate to compensate for thermo-expansion and contraction of the pump elements.

3,776,661

WATER LEVEL CONTROLLED PUMP SYSTEM

Joseph F. Wohnlich, Warren, Ind., assignor to United Filtration Corporation, Chicago, Ill.

Filed Dec. 28, 1970, Ser. No. 101,937
Int. Cl. F04b *49/00*
U.S. Cl. 417—12 **1 Claim**



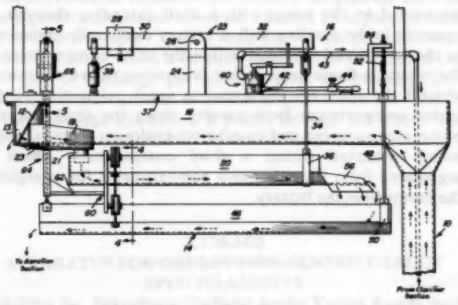
A fluid actuated pump system including a pump, a source of power for operating the pump and sensing means for connecting the pump with the power source. The sensing means is responsive to a fluid level and includes a housing having an open lower end and a pressure conduit connecting the housing with a pressure-responsive switch. The pressure-responsive switch operates the pump through a dampening heating element.

3,776,662

AUTOMATIC AIR VALVE CONTROL APPARATUS

Ellis C. Hall, Rt. 2, P.O. Box 107, Gautier, Miss.

Filed Apr. 17, 1972, Ser. No. 244,763
Int. Cl. F04b *49/00*; F04f *1/18*
U.S. Cl. 417—37 **6 Claims**



An apparatus particularly for controlling the amount of air supplied to an air-lift pump used for pumping return sludge from a clarifier section to an aeration section of a sewage and waste treatment plant. A weir is arranged for diverting a portion of a flow from a flow path created by the air-lift pump. This diverted flow portion is fed to an arrangement including a pair of troughs for weighing the diverted flow portion. One arm of a balance beam is connected to one of the troughs and to an air control valve for regulating the air supplied to the air-lift pump as a function of the weight of the diverted flow portion. The trough connected to the regulating arrangement is connected to the other trough at an end spaced from its connection to the regulating arrangement by a device for inversely duplicating in the trough a displacement of the other trough, resulting in the spaced end of the trough being displaced by the other trough and the rate of flow in the trough being thus varied. As a, for example, heavier sludge or other material flows through the trough and into the other trough, the material receiving end of the trough will be raised resulting in the trough holding less material, and a counterweight on the other balance beam arm will move the end of the trough connected to the balance beam upwardly and increase the supply of air to the air-lift pump. A lighter sludge or other material flowing into the other trough reverses this procedure.

3,776,663

AERODYNAMIC PRESSURE-WAVE MACHINE

Nicolaus Croes, Niederrohrdorf, Switzerland, assignor to Brown Boveri & Company Limited, Baden, Switzerland

Filed Aug. 29, 1972, Ser. No. 284,764
Claims priority, application Switzerland, Oct. 19, 1971, 15215/71
Int. Cl. F04f *1/00*
U.S. Cl. 417—64 **4 Claims**

An aerodynamic pressure-wave machine which includes a stator and a celled rotor, the stator being provided with gas inlet and outlets adjoining one side of the rotor at one end of the rotor cells and air inlets and outlets adjoining the opposite side of the rotor at the opposite end of the rotor cells. The stator also includes a compression recess located after the air inlet, as viewed in the direction of rotation of the cells, and a web located in the gas outlet. This web extends radially for the entire height of the gas outlet and its width is approximately the same as one of the rotor cells. The function of the web is to cause pressure waves to impinge upon the compression recess at the highest and lowest speeds within the greatest part of the operating range of the machine.

3,776,664

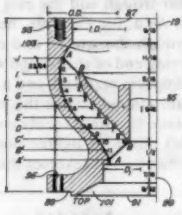
SMALL DIAMETER IRRIGATION PUMP

Ardean Kimmel, Rt. 3, Deleon, Tex.

Filed Aug. 18, 1972, Ser. No. 281,791
Int. Cl. F04b *23/00*
U.S. Cl. 417—243 **7 Claims**

An irrigation pump having exceptional flexibility and unusually large pumping capacity in terms of gallons pumped per inch of outside diameter characterized by: (1) unusually large flow passageways through its inlet adapter, impellers, bowls and top manifold in proportion to its outside diameter

and (2) flexibility with one bowl that is adapted to take three specifically designed impellers for different ratings without infeasibly adversely affecting the efficiency of the pump. The impellers have a reduced outside diameter and enlarged inlet diameter, but compensate for the reduced diameter by specifically designed spirally exteriorly ascending passageways to effect the flow capacity as great as prior art pumps 20 percent larger. The irrigation pump of this invention is able to be installed in wells drilled with an 8 inch bit; whereas, pumps of the prior art having the same capacity required a well that was drilled with a twelve inch bit which more than doubled the cost of drilling the irrigation well.

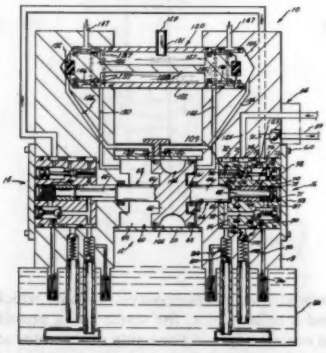


3,776,665

TWO STAGE FLUID PUMP

Thomas B. Dalton, Muskegon, Mich., assignor to Westran Corporation, Muskegon, Mich.

Filed July 8, 1971, Ser. No. 160,614
Int. Cl. F04b *3/00*
U.S. Cl. 417—252 **5 Claims**



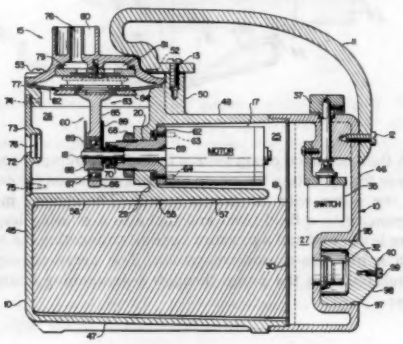
A fluid pump having a reciprocally mounted air driven piston including portions extending from opposite sides thereof with each piston portion extending into a pair of axially spaced pressure chambers such that when the air piston is reciprocated in one direction within the housing the piston portion at one end is in a compression stroke and compresses its associated chambers to discharge pressure fluid from the pump through an appropriate outlet portion, while the portion at the opposite end of the air piston is in an expansion stroke and expands its associated chambers to draw fluid therein from a reservoir. One pressure chamber associated with each of the piston portions has a valve means adapted to exhaust fluid pressure therein while closing communication with its associated chamber when the pressure in the same reaches a predetermined value. Actuation of the valve means is accomplished by an actuating mechanism responsive to a predetermined pressure build up as caused by the load being imposed upon the fluid user such that in the absence of a predetermined pressure being produced by the fluid user during each compression stroke fluid is discharged from the pump from both chambers at a first, relatively high, rate of flow and at a pressure less than the predetermined pressure, and upon the predetermined pressure being reached the spaced pressure chambers are fluidly disconnected, resulting in a decreased rate of fluid flow from the pump, while the pressure of the discharged fluid is increased. Valve means are provided to control the direction of flow of the fluid discharged from the pressure chambers on opposite sides of the air piston to either direct the fluid from each side of the pump to a single fluid user or to provide two sources of pressure fluid for separate fluid users.

3,776,666

PORTABLE PUMP

Philip Ludwig, Merrick, N.Y., assignor to Deknatel, Inc., Long Island, N.Y.

Filed Feb. 18, 1972, Ser. No. 227,507
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—411 **6 Claims**



An explosion proof portable pumping unit instantaneously available for pumping flammable fluids. The pumping unit comprises a housing internally divided into three compartments, a diaphragm pump mounted within one compartment, an electric motor mounted within a second compartment and connected to the pump with a shaft extending through an aperture in the dividing wall, a battery electrically connected to the motor and mounted within the same compartment as the motor, a flame-propagation prevention sleeve concentric around the shaft for preventing a spark originating in the motor compartment from passing along the shaft into the pump compartment and causing an explosion therein, and a switch mounted within a third compartment which is segregated from the other two compartments for energizing the motor from the battery.

3,776,667

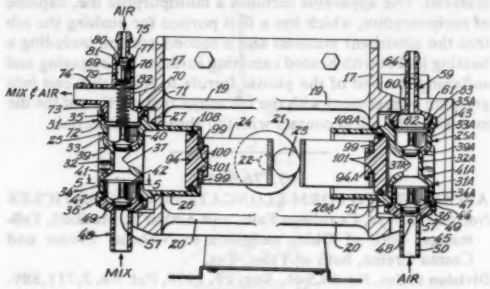
ICE CREAM PUMP

Harold A. Berglund, Afton, and David F. Thomas, West St. Paul, both of Minn., assignors to Waterous Company, St. Paul, Minn.

Division of Ser. No. 61,658, Aug. 6, 1970, Pat. No. 3,697,197.
This application May 1, 1972, Ser. No. 248,976
Int. Cl. F04b *39/14, 21/02*
U.S. Cl. 417—454 **10 Claims**

A double acting pump is provided for pumping air in one

cylinder and liquid mix into another. The cylinders and valve housings, together with the inlet and outlet fittings, are readily



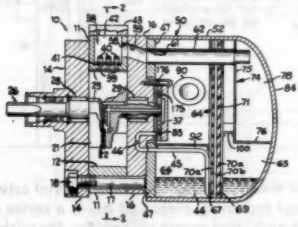
separable for cleaning. The entire pump unit may be disassembled for cleaning by the removal of four knobs or nuts.

3,776,668

OIL SEPARATOR FOR REFRIGERATION COMPRESSOR

Frederic H. Abendschein, Columbia, Pa., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 18, 1972, Ser. No. 227,513
Int. Cl. F01c *21/04*; F04c *29/02*
U.S. Cl. 418—97 3 Claims



An improved oil separator, particularly adapted for use with a refrigerant compressor in which oil must be separated from the refirgerant vapor. The oil separator of the present invention is characterized by a oil coalescing screen arranged in the flow path of discharge gas delivered from the discharge port and a novel arrangement of baffles which reduce the velocity of the discharge gas before it passes through the screen and prevent re-entrainment of oil in the discharge gas.

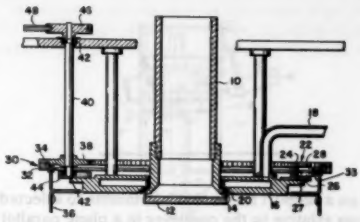
3,776,669

APPARATUS FOR COLLECTING CENTRIFUGALLY SPUN FILAMENTS

Yukihiko Ito, Fukushima; Tadashi Araki; Yoshio Kawai, both of Tokyo, and Iwao Kameyama, Fukushima, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 29, 1971, Ser. No. 213,297
Claims priority, application Japan, Dec. 29, 1970, 45/120974
Int. Cl. B29c *23/00*
U.S. Cl. 425—8 3 Claims

An apparatus for collecting centrifugally spun filaments from a rotating spinning device of a centrifugal melt spinning machine. The collecting apparatus includes at least one stationary air-jet, surrounding the rotating spinning device, a



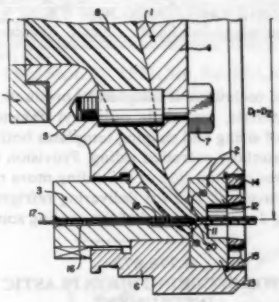
rotatable cylindrical collecting surface that is air-permeable, and a stationary cutter located between the rotating spinning device and the rotating collecting surface.

3,776,670

EXTRUSION HEAD FOR PRODUCING A RESISTANT ELEMENT OF A CONVEYOR BELT, DRIVING BELT AND THE LIKE

Attilio Antioletti, and Nino Madonini, both of Milan, Italy, assignors to Industrie Pirelli S.p.A., Milan, Italy

Continuation of Ser. No. 889,260, Dec. 30, 1969, abandoned.
This application Mar. 21, 1972, Ser. No. 236,794
Claims priority, application Italy, Jan. 1, 1969, 11173 A/69
Int. Cl. B28b *21/56*
U.S. Cl. 425—114 4 Claims



This invention pertains to an extrusion head for producing a resistant element of a conveyor belt or the like, the particular resistant structure of which comprises metal wires or threads of various diametrical dimensions. The extrusion head is capable of producing a tube of uncured elastomeric material in which longitudinal metal wires or threads are embedded during its formation. The tube is then cut along one of its generatrices by suitable means and is converted to a flat band.

3,776,671

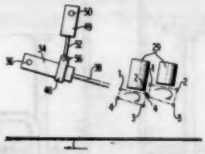
APPARATUS FOR PRODUCING CONFECTION BARS

Joost M. M. Bruschke, and Ronald E. Minor, both of Richmond, Va., assignors to Eskimo Pie Corporation, Richmond, Va.

Filed Nov. 13, 1970, Ser. No. 89,402
Int. Cl. A23g *5/02*
U.S. Cl. 425—164 2 Claims

A method and apparatus for producing confection bars in which a unitary cutting element is periodically passed transversely across a length of confection mix being extruded from a downwardly facing extruder nozzle positioned over a conveyer with the cutting element being supported and caused to move through the extruded length from one side to the other

in a plane intersecting the plane of the conveyer immediately below the nozzle at an acute angle, the reciprocating single cutter element and the extruder nozzle assembly being



mounted on a support frame that is rotatable to selected angular positions relative to the conveyer in a plane parallel to the line of conveyer movement.

3,776,672

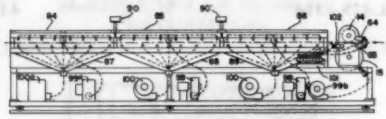
METHOD AND APPARATUS FOR PRODUCING SIDING

Peter F. Heilmayr, McPherson, Kans., assignor to Certain-teed Products Corporation, Valley Forge, Pa.

Continuation-in-part of Ser. No. 225,348, Feb. 10, 1972, and a continuation-in-part of Ser. No. 225,347, Feb. 10, 1972, said Ser. No. 225,348, is a continuation of Ser. No. 2,900, Jan. 14, 1970, abandoned, said Ser. No. 225,347, is a division of Ser. No. 2,900, Jan. 14, 1970, abandoned. This application Apr. 12, 1972, Ser. No. 243,205

Int. Cl. B29d 7/02; B29f 3/08

U.S. Cl. 425—72 **7 Claims**



The disclosed technique is adapted to production of siding from resin materials, especially polyvinyl chloride, and includes the use of sizing and shaping templates both above and below the horizontally extruded siding. Provision is made for cooling the lower convex side of the siding more rapidly than the upper concave side and for delivering refrigerated air to the siding in the downstream end of the cooling zone.

3,776,673

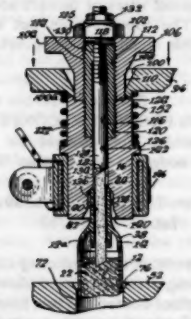
APPARATUS FOR SECURING NIB IN PLASTIC WRITING INSTRUMENT

Walter J. DeGroft, Glen Ellyn, Ill., assignor to Sanford Research Company, Bellwood, Ill.

Division of Ser. No. 813,886, April 7, 1969, abandoned. This application Sept. 27, 1971, Ser. No. 183,963

Int. Cl. B29c 27/14, 27/30

U.S. Cl. 425—125 **7 Claims**



An apparatus for securing a wick-like nib in a plastic ferrule of a marking instrument which has a hollow body containing porous absorbent material for storing a quantity of ink. The apparatus deforms the outer end of the ferrule into positive gripping engagement with the nib by applied heat and pressure while maintaining the nib in contact with the absorbent material. The apparatus includes a multipurpose die, capable of reciprocation, which has a first portion for pushing the nib into the absorbent material and a second portion including a heating jacket with heated camming surfaces for engaging and softening the end of the plastic ferrule to force that end into gripping engagement with the nib as the first portion of the die maintains the nib in contact with the absorbent material.

3,776,674

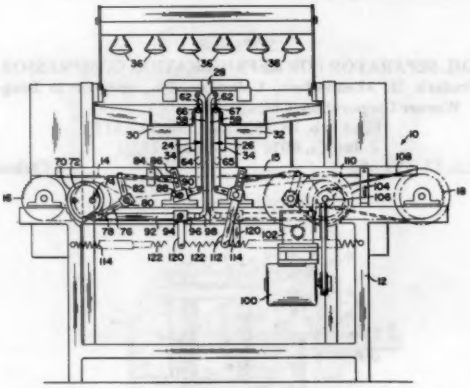
APPARATUS TO FORM ELONGATE PLASTIC ARTICLES

Norman H. Nye, Cuyahoga Falls, and Arthur T. Medkeff, Tallmadge, both of Ohio, assignors to Nicholas Creme and Cosma Creme, both of Tyler, Tex.

Division of Ser. No. 64,946, Aug. 19, 1970, Pat. No. 3,711,589. This application July 12, 1972, Ser. No. 271,139

Int. Cl. B29c 9/00

U.S. Cl. 425—134 **4 Claims**



Apparatus for making elongated multi-colored articles from a plastic material including means to move a series of molds through a fixed path, two members one for depositing a controlled amount of heated liquid plastic material of one color into one end portion of each of the molds and a second for depositing a controlled quantity of a heated liquid plastic material of a second color in overlapping relation to a portion of the first material to fill the remainder of the mold cavity with the second material. The two members for providing controlled discharge of regulated amounts of the two plastic materials are positioned in immediate association with each other for prompt discharge of the second material in the mold cavity after the first material has been introduced into the mold and they include a plurality of substantially vertically extending control links positioned adjacent a pair of discharge head assemblies present in the apparatus.

3,776,675

INJECTION MOULDING PRESS WITH MEANS FOR SEPARATING SCRAP MATERIAL FROM THE MOLDED ARTICLES

Giovanni Bessolo Veneria, Ivrea, Italy, assignor to Ing. C. Olivetti & C. S. p.A., Ivrea, Italy

Filed Sept. 10, 1971, Ser. No. 179,363

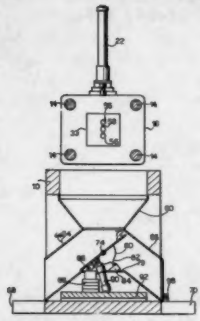
Claims priority, application Italy, Sept. 18, 1970, 70144 A/70

Int. Cl. B29f 1/14

U.S. Cl. 425—139 **1 Claim**

An injection-moulding press is arranged to eject the moulded article and the deadhead at different moments. A deflector is arranged under the die from which the articles and

deadheads are ejected, and is moved between two positions during the interval between the ejection of an article and a deadhead. In one position, the delfector guides a falling article



into a collection bin for articles, and in the second position it guides a falling deadhead into a bin for deadheads. Manual sorting of the articles from the deadheads is thus avoided.

3,776,676

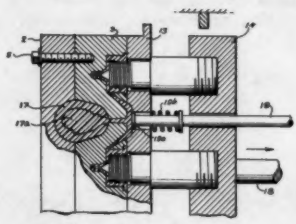
INSULATED RUNNER SYSTEM FOR PLASTIC CAP MOLDS

Milton Kessler, 6690 Harrington, Youngstown, Ohio

Division of Ser. No. 61,766, Aug. 6, 1970, abandoned. This application June 26, 1972, Ser. No. 266,365

Int. Cl. B29f *1/08*

U.S. Cl. 425—250 **2 Claims**



In extrusion molding of plastic screw caps, the unit cap cost can be closely related to the number of caps which can be made at each cycle of the mold operation. A system is described which maximizes the number of caps by providing hot, self-insulated runners which feed a number of relatively short sprue channels with hot plastic so that a larger number of caps than before can be molded in a single cycle without the remoter caps at the edges of the die being fed plastic too cool to permit successful caps to be molded.

3,776,677

PIPE MAKING MACHINE

Horace Allan Wilkinson, Lilli Pilli, New South Wales, Australia, assignor to Monier Research & Development Pty. Ltd., Villawood, New South Wales, Australia

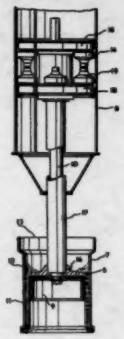
Filed Dec. 20, 1971, Ser. No. 209,834

Claims priority, application Australia, Dec. 24, 1970, PA 3589

Int. Cl. B28b *1/29*

U.S. Cl. 425—262 **3 Claims**

A machine for moulding pipe in an upright stationary mould having a cylindrical troweling element rotatable within the mould and axially moveable therein. Packing means directly above the troweling element have rollers to pack the moulding



material into the space between the element and the mould. Deflector bars and closure plates adjacent the roller assure proper distribution of the material.

3,776,678

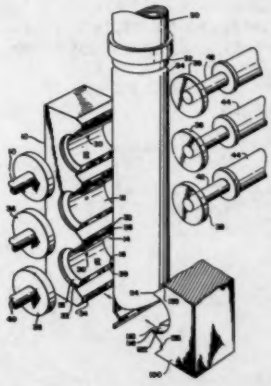
BLOW MOLDING APPARATUS

Sheldon Saslawsky, Easton, Conn., assignor to Textron Inc., Providence, R.I.

Filed Sept. 27, 1971, Ser. No. 184,144

Int. Cl. B29d *23/03*

U.S. Cl. 425—310 **4 Claims**



Blow molding apparatus and method for making a hollow plastic spool include a four section mold operated in a particular sequence to confine a thermoplastic core by two of the mold sections forming an open ended cavity while such core is permitted to expand outside the open ends of the cavity; coring pins carried by the other two mold sections deform the longitudinal axis of the protruding core and the other two mold sections close the cavity to finalize the shape of plastic spool and to pinch off excess plastic which has blown outside the peripheral edges of the mold cavity.

3,776,679

APPARATUS FOR THE MANUFACTURE OF PLASTIC TUBING OF SPECIAL CROSS-SECTIONAL CONFIGURATION

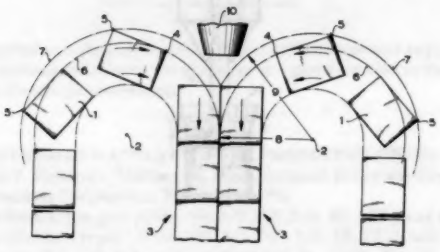
Wilhelm Hegler, 8731 Oerlenbach, Germany

Filed Apr. 8, 1971, Ser. No. 132,471

Claims priority, application Germany, Dec. 11, 1970, P 20 61 027.9

Int. Cl. B29c *17/07*

U.S. Cl. 425—325 19 Claims



Improvements in the manufacture of transversely annular or helical corrugated thermoplastic tubing made by extruding a thermoplastic tubing and feeding the tubing into the jaws of revolving or recycling mold halves which come together about the tubing to form transverse corrugations therein, which improvement resides in bringing the mold halves about their recycle tracks or paths, particularly about the last arcuate path before entering the molding path, in such manner that their forward end, and particularly the outside edge of the forward end, has a smaller radius of curvature than does the rearward end, and particularly the outside edge of the rearward end.

3,776,680

EXTRUDER MOVEMENT

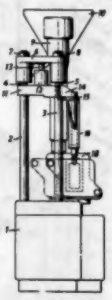
Ronald George Saffron, London, England, assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Continuation of Ser. No. 882,913, Dec. 8, 1969, abandoned. This application Jan. 27, 1972, Ser. No. 221,393

Claims priority, application Great Britain, Feb. 14, 1969, 8,104/69

Int. Cl. B29d *23/03*

U.S. Cl. 425—326 2 Claims



In a blow moulding machine of the kind in which an extruder feeds a tubular extrusion into a two-part die, the die subsequently closing and gripping the extrusion and the extruder being retracted to stretch the extrusion for severing between the extruder nozzle and the die, the extruder nozzle is arranged to retract linearly and axially from the die so as to cause the extrusion to be stretched symmetrically and linearly along its axis, thereby resulting in the severed edges of the extrusion being in a plane normal to the axis of the extrusion.

3,776,681

THERMOFORMING APPARATUS

Peter C. Neil, Fullerton, Calif., assignor to Standard Oil Company, Chicago, Ill.

Filed Apr. 27, 1971, Ser. No. 137,941

Int. Cl. B29c *3/04*

U.S. Cl. 425—346 5 Claims

Disclosed is a thermoforming apparatus including a mold assembly wherein the mold sections of the assembly are moved relative to each other in accordance with a harmonic pattern of movement, and a film advancing assembly that moves the film intermittently in accordance with a harmonic pattern of movement.

3,776,682

APPARATUS FOR PRODUCING RADIALLY-EXPANDED SOCKET ENDS ON THERMOPLASTIC PIPE LENGTHS

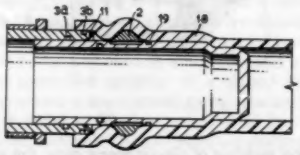
Gunnar Parmann, Mathopen, Norway, assignor to Rieber & Son Plastic-Industri A/S, Bergen, Norway

Filed Apr. 21, 1972, Ser. No. 246,217

Claims priority, application Norway, Apr. 26, 1971, 1538/71; Sept. 27, 1971, 2386/71

Int. Cl. B29c *17/02*

U.S. Cl. 425—384 13 Claims



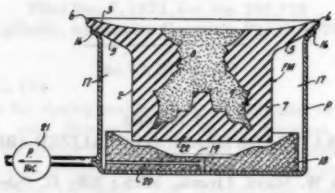
Process and apparatus for producing radially expanded socket ends on pipe lengths of thermoplastic material. An appropriately heated pipe end is fashioned over a shape-conferring means comprising a substantially cylindrical drift, a mould element for forming an internal, radially expanded peripheral groove in said end and support means mounted on said drift and axially displaceable relative thereto. The support means is maintained in a desired position with a view to locating the mould element in the face of a pushing-on force from the pipe and as drift, mould element and support means are caused to be led in succession axially into the hot pipe end. Subsequent to the desired insertion of the mould element in the hot pipe end, the support means is axially displaced relative to the drift outwardly from the pipe end, thereby enabling elastic forces in the radially expanded pipe end to be drawn radially inwards against the drift and said end to be fashioned by the mould element into the required form. The mould element and fashioned pipe end are then subjected to cooling prior to their joint removal from the drift.

3,776,683

APPARATUS FOR MOLDING ARTICLES

Raymond M. Putzer, Racine, and William J. Maurino, Kenosha, both of Wis., assignors to Precision Flexmold, Inc., Racine, Wis.

Filed Jan. 31, 1972, Ser. No. 222,141
Int. Cl. B28b 7/06
U.S. Cl. 425—440 13 Claims



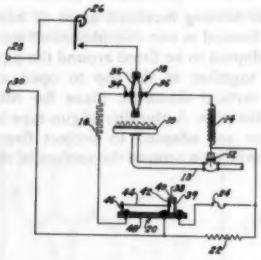
Molding apparatus for molding articles without a seam or parting line even though the articles may have severe backdraft portions. The apparatus includes a one-piece flexible mold of relatively thick and self-supporting wall construction which is deformable by the application of fluid pressure differential to thereby release the finished article from the mold. One modification of the one-piece mold also has a thick radially extending flange which forms a seal with a vacuum pot when the mold is simply set in the pot.

3,776,684

IGNITION AND CONTROL SYSTEM FOR GAS BURNERS

James A. Wright, Webster Groves, Mo., assignor to Emerson Electric Co., St Louis, Mo.

Filed May 10, 1972, Ser. No. 252,122
Int. Cl. F23n 5/04
U.S. Cl. 431—66 7 Claims



A ceramic glow igniter is connected in series with the hot-wire actuating element of a normally open thermal relay across a power source through a double-throw switch when in its cold position. This causes heating of the igniter to ignition temperatures, causes the hot wire element to expand and close the relay, and the heat of the igniter causes the double-throw switch to move to its hot position thus breaking the igniter and hot wire circuit. The electromagnetic winding of a normally closed solenoid gas valve is connected across the power source through the now-closed relay and the double-throw switch, now in its hot position, causing the gas valve to open. Due to thermal lag, the gas valve opens before the thermal relay opens and ignition of the gas occurs before the igniter cools. Burner flame maintains the double-throw switch in its hot position, and a current limiting resistor connected across the relay holds the solenoid gas valve open.

3,776,685

FLASHLAMP PRIMER PRECOATING

Stephen P. Senft, Cleveland Hts., and Vaughn C. Sterling, Cleveland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1971, Ser. No. 198,956
Int. Cl. F21k 5/02
U.S. Cl. 431—93 4 Claims

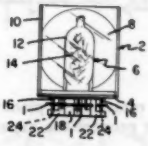
A precoating of rewettable polyvinyl alcohol is provided on the anvil member of a percussion-ignitable flashlamp to improve adherence of the primer coating as well as improve performance of the primer coating when the lamp is actuated.

3,776,686

PHOTOGRAPHIC FLASHLAMP UNIT

Lester F. Anderson; William C. Fink, and William T. Colville, all of Williamsport, Pa., assignors to Sylvania Electric Products Inc., Danvers, Mass.

Continuation of Ser. No. 773,176, Nov. 4, 1968, abandoned.
This application Sept. 8, 1970, Ser. No. 70,496
Int. Cl. F21k 5/02
U.S. Cl. 431—93 5 Claims



A flashcube having lamps of the percussive primer type and having self-contained means for firing them.

3,776,687

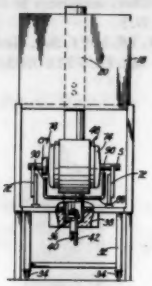
METHOD AND APPARATUS FOR HEATING WORK PIECES

Robert F. Heran, 1842 Dovna Dr., West Lake, Ohio

Filed June 19, 1972, Ser. No. 263,959
Int. Cl. F27d 3/00
U.S. Cl. 432—6 12 Claims

A method and apparatus for heating work pieces, especially motor armatures to degrade the insulation thereon for facile removal of the windings. The apparatus includes an annular combustion chamber, positioned to surround the work piece, enclosing it in a work piece receiving space. A combustion pipe provides combustion flame to the chamber and a combustion exhaust pipe exhausts the products of combustion from the chamber. Also, ports connect the work piece receiv-

ing space with the combustion chamber to vent the volatile combustible material with the products of combustion.



Preferably the exhaust pipe vents to an afterburner chamber where complete combustion of the products is accomplished. Other features are also disclosed.

3,776,688

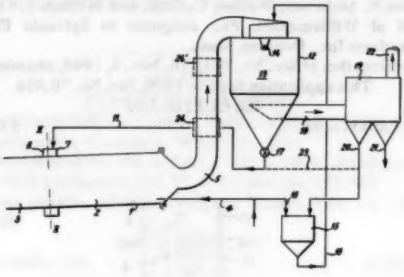
METHOD FOR OPERATING A ROTATING KILN PLANT FOR THE PRODUCTION OF CEMENT AS WELL AS A PLANT FOR CARRYING OUT THE METHOD

Jorgen Damgaard-Iversen, Birkerod, and Flemming Kruse, Farum, both of Denmark, assignors to Aktieselskabet Niro Atomizer, Gladsaxevej, Soborg, Denmark

Continuation of Ser. No. 77,929, Oct. 5, 1970, abandoned. This application June 29, 1972, Ser. No. 267,722

Int. Cl. F27b *7/02*

U.S. Cl. 432—14 **14 Claims**



The operation of a rotating kiln plant for producing cement according to the wet process the capacity of the kiln is increased and the heat economy is improved by drying a part of the cement slurry in a spray drier and introducing the spray-dried material into the kiln in the transition between the drying zone and the calcining zone of the latter. The sum of the quantity of slurry which is spray-dried and the quantity introduced in normal way at the inlet of the kiln plant is 120–300 percent by weight of the normal capacity of the kiln. The spray drying is performed using exhaust gas from a rotating kiln, which may be the same as that in which the spray-dried material is introduced.

3,776,689

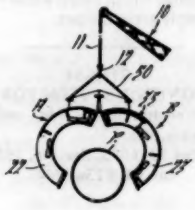
APPARATUS FOR HEATING LOCALIZED AREAS OF PIPE

Frederick W. Mayo, Livonia, Mich.; Billy G. Spires, Kenai, Alaska, and William M. Bockelman, Livonia, Mich., assignors to Burners, Inc., Detroit, Mich.

Filed June 8, 1970, Ser. No. 44,427

Int. Cl. F27d *3/00*; **F23c** *5/00*

U.S. Cl. 432—183 **11 Claims**



A device for heating localized areas of horizontally positioned pipe is formed in two complemental semi-annular hollow sections adapted to be fitted around the pipe, the sections being hinged together at the top to open and close with respect to a vertical diametric plane for fitting upon and removal from the pipe. A plurality of gun-type burners carried by the sections are adapted to project flame and heated products of combustion around the surface of the pipe.

CHEMICAL

3,776,690
PROCESS FOR DYEING TEXTILES MADE OF POLYESTER OR CELLULOSE TRIACETATE

Stefan Wiatrowski, Bischofsheim; Christian Heid, and Karl-Heinz Keil, both of Frankfurt, Main, Fechenheim, all of Germany, assignors to Cassella Farbwerke Mainkur Aktiengesellschaft, Frankfurt, Germany

Filed Dec. 7, 1971, Ser. No. 205,718

Claims priority, application Germany, Dec. 9, 1970, P 20 60 565.6

Int. Cl. D06p *1/68*

U.S. Cl. 8—174 **7 Claims**

Process for dyeing textiles made of polyester or cellulose triacetate with dispersed dyes, in an aqueous medium, whereby the dyeing is carried out with the concurrent use of 0.5 – 10 c.c./1. trichloroethylene and/or perchloroethylene as carrier and an emulsifier, with pressure and temperatures above 100°C..

3,776,691
PROCESS FOR DYEING AND PRINTING TEXTILE MATERIALS CONTAINING ACID GROUPS WITH BASIC DYESTUFFS

Rudolf Neeb, Obertshausen; Eberhard Mundlos, Heusenstamm, and Reinhard Mohr, Offenbach/Main, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

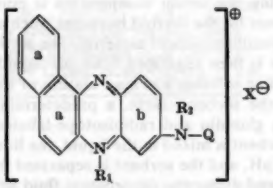
Filed Apr. 21, 1972, Ser. No. 246,167

Claims priority, application Germany, Apr. 26, 1971, P 21 20 246.0

Int. Cl. D06p *3/76*

U.S. Cl. 8—177 AB **7 Claims**

Process for the dyeing and printing of textile materials made from polymers or copolymers of acrylonitrile by using dyestuffs of the general formula



in which R_1 represents an alkyl, aralkyl, aryl or heterocyclic radical which may be substituted R_2 represents hydrogen or an alkyl or aralkyl radical which may be substituted, Q represents an aromatic or heterocylic radical which may be condensed with the benzene nucleus *b*, and X represents an anion and the benzene radicals *a* and *b* as well as the radical Q may contain further non-ionogenic substituents. The dyeings and prints thus obtained show a good fastness to light, wet processing, washing, fulling, over-dyeing, to chlorine, to perspiration and to carbonizing as well to decatizing, steaming, ironing, rubbing and to solvents.

3,776,692
RECURABLE CROSSLINKED CELLULOSIC FABRICS FROM METHYLOL REAGENTS AND POLYCARBOXYLIC ACIDS

William E. Franklin, and Stanley P. Rowland, both of New Orleans, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Apr. 27, 1972, Ser. No. 248,200

Int. Cl. D06m *15/56, 13/20, 13/14*

U.S. Cl. 8—181 **22 Claims**

Cellulosic fabrics are treated with formulations containing methylol crosslinking reagents and polycarboxylic acids having three or more acidic groups per molecule. The treated fabrics are cured in a flat configuration and washed. The fabric is subsequently heated in a folded configuration whereby the folded or creased configuration is permanently imparted to the fabric.

3,776,693
DRY CLEANING COMPOSITION AND PROCESS

Grant N. Smith, Midland, and Yvonne S. Taylor, Alma, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jan. 24, 1972, Ser. No. 220,485

Int. Cl. D06l *1/00*

U.S. Cl. 8—142 **9 Claims**

Improved removal of stains of animal or vegetable origin from fabrics by a dry cleaning process is obtained when the dry cleaning solvent contains small amounts of water and one or more enzymes. Proteolytic enzymes such as trypsin are of particular interest.

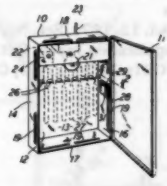
3,776,694
GERMICIDAL TOILETRY CABINET FOR DIFFERENT PERSONAL HYGIENE ITEMS

Leo C. Leitti, 830 Everett Ave., Ingleside, Ill.

Continuation-in-part of Ser. No. 38,321, May 18, 1970, abandoned. This application Apr. 3, 1972, Ser. No. 240,396

Int. Cl. A61l *3/00, 9/00*; A47g *29/08*

U.S. Cl. 21—102 R **6 Claims**

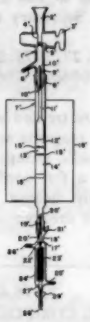


A cabinet housing having a swingable door and an electric switch actuated by the door and an electric lamp disposed within the housing. The housing has openings for the emission of rays of light, and the lamp is actuated by opening and closing the door. A tooth brush rack is mounted in the housing, and another support member, for tooth water picks, combs, and the like, is also mounted in the housing for receiving these other items, all for sterilization of the tooth brushes and water picks and like items, by the action of the germicidal lamp, a unitary piece extends through the width of the cabinet at the top thereof and provides the rack, and a bracket is affixed to the unitary piece and supports the electric switch and shields the electric switch from being approached exteriorally of the switch.

3,776,695
SCINTILLATION ANALYSIS SYSTEM

John I. Peterson, Falls Church, Va., assignor to The United States of America as represented by the Secretary Department of Health, Education and Welfare, Washington, D.C.

Filed Sept. 30, 1970, Ser. No. 76,705
Int. Cl. G01n *31/12*; G21h *5/00*
U.S. Cl. 23—230 PC **22 Claims**

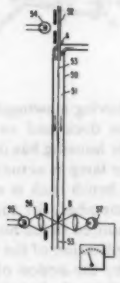


A system for the combustion preparation of samples for scintillation analysis comprising a combustion tube containing a combustion catalyst, a chimney tube positioned within the combustion tube and resting on the catalyst and means for admitting a sample for combustion, oxygen gas for ignition and an outlet means for the combustion product. Also, means for collecting the combustion products comprising: for H_2O an externally cooled condenser like system containing means for contacting a scintillation solvent with the gaseous combustion products in a cooled zone; and for CO_2 an externally cooled condenser like system containing a helical rotatable band within the inner bore thereof for distributing a scintillation solvent along the walls thereof for countercurrent contact with the CO_2 combustion product.

3,776,696
LIQUID SENSITOMETRY OF PHOTOGRAPHIC EMULSION

Hisatoyo Kato, and Hideo Takeda, both of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Oct. 12, 1971, Ser. No. 188,404
Claims priority, application Japan, Oct. 13, 1970, 45/89933
Int. Cl. G01n *21/26, 33/00*; G03c *5/26*
U.S. Cl. 23—230 R **4 Claims**



A method of performing liquid sensitometry on a liquid photographic emulsion wherein the photographic emulsion is exposed to radiation and then caused to flow in contact with a developer solution. The photographic emulsion and developer remain in distinct layers in contact with each other. During the period when the developer and emulsion flow together, the emulsion is developed by diffusion and penetration of the developer at the interface between the developer and emulsion. The optical density of the developed emulsion is continuously measured.

3,776,697
METHOD AND REAGENT FOR DETERMINING NITROGEN OXIDES

Richard W. Crawford; Lester P. Rigdon, both of Livermore, Calif., and Richard J. Thompson, Hillsborough, N.C., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 13, 1972, Ser. No. 243,877
Int. Cl. G01n *31/22*
U.S. Cl. 23—232 R **9 Claims**

A measured quantity of gas such as atmosphere containing nitrogen oxides is contacted with Hochheiser solution comprising dilute base with or without a foaming agent, however, now containing small amounts of O_5O_4, XeO_3 or perxenate whereupon at least about 90 to 95 percent of the NO_2 is absorbed yielding nitrate and nitrite in the solution. Nitrate may then be converted to nitrite as by reduction in a cadmium amalgam cell. Then the amount of nitrite is determined photometrically using Saltzman's reagent comprising n-(1-naphthyl)-ethylene diamine and sulfanilic acid which forms a dye specifically with $-NO^-_2$. The collection efficiency of the Hochheiser solution is increased from 25–70 percent to above 90 percent yielding a more accurate indication of NO_2 content.

3,776,698
TEST FOR THYROID HORMONE

Anna M. Eisentraut, Dallas, Tex., assignor to Nuclear-Medical Laboratories, Inc., Dallas, Tex.

Filed Jan. 24, 1972, Ser. No. 220,458
Int. Cl. C07c *101/72*; G01n *33/16*; G21h *5/02*
U.S. Cl. 23—230 B **17 Claims**

Method for separating thyroid hormone from blood serum, which is particularly suitable for use in an improved T-4 test procedure. The improved T-4 test procedure includes an extraction step whereby thyroid hormone (thyroxine) is initially extracted from a blood sample by admixing the sample with an acidic solution to free the thyroid hormone from hormone-binding globulin in the sample, and thereafter the acidic solution containing the serum components is contacted with a suitable sorbent for the thyroid hormone, such as a particulate inorganic crystalline sorbent material. The sorbent containing the hormone is then separated from the liquid and admixed with an alkaline solution to cause elution of the thyroid hormone from the sorbent. Next, a predetermined amount of thyrobinding globulin and radioisotope-labeled thyroid hormone and sorbent is mixed in the liquid, the liquid adjusted to an optimum pH, and the sorbent is separated from the supernatant fluid and either the supernatant fluid or the sorbent is counted in a scintillation counter.

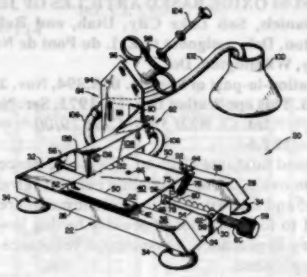
3,776,699
RED CELL RINSER

Ronald E. Gross, Springfield, Va., assignor to The Cooke Engineering Company, Alexandria, Va.

Filed Oct. 20, 1971, Ser. No. 190,813
Int. Cl. A61m *1/03*; B01l *11/00*; G01n *33/16*
U.S. Cl. 23—259 **13 Claims**

A red cell rinsing apparatus for preparing serological and like test specimens of sera including a liquid manifold having a plurality of ejection pipettes through which a plurality of microquantities of rinsing liquid are simultaneously ejected, and a carrier tray for supporting a plurality of red blood cell

specimens arranged in rows. The tray is manually moved and located underneath the manifold successively to a plurality of



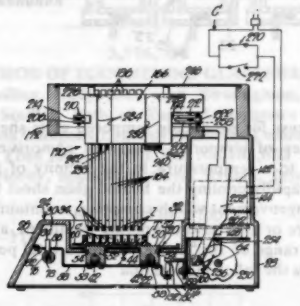
predetermined portions in which the respective rows of specimens are automatically aligned with the ejection pipettes.

3,776,700

SERIAL DILUTION APPARATUS

Reginald R. Gallant, Bristol, Conn., assignor to Linbro Chemical Co. Inc., New Haven, Conn.

Filed Dec. 8, 1971, Ser. No. 205,828
Int. Cl. G01n *31/00, 31/16, 33/16*
U.S. Cl. 23—259 **20 Claims**



Apparatus for making serial dilutions in longitudinal titration trays having equally spaced transverse rows of cups, providing an elevator vertically movable into upper and lower positions, a carriage for removably supporting and locating a tray thereon and being supported and guided on the elevator for horizontal movement lengthwise of a located tray, fixed oscillatory loops above the carriage and arranged for their alignment with the cups in any row in a located tray on movement of the carriage on the elevator in its lower position, and for their reach into the aligned cups on movement of the elevator into its upper position, and operating mechanism, including controls, performing in a presettable number of cycles in each of which the elevator is raised to its upper position, the loops are oscillated, the elevator is moved to its lower position, and the carriage is indexed to bring a next cup row in a tray thereon into alignment with the loops.

3,776,701

CATALYST SUPPORTING STRUCTURE

James B. Hunter, Newtown Square, Pa., assignor to Matthey Bishop Inc., Malvern, Pa.

Filed Oct. 5, 1971, Ser. No. 186,630
Int. Cl. B01j *1/00, 9/04*
U.S. Cl. 23—288 R **9 Claims**

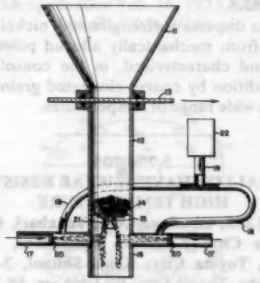
A catalyst supporting structure comprising a layer of heat-resistant rope elements composed of compacted knitted wire, placed in contiguous relationship with each other to provide a pad of substantially uniform thickness and having flat top and bottom surfaces and a woven sheet of heat-resistant material bonded to each surface.

3,776,702

APPARATUS FOR MINERAL-FILLED FOAM PRODUCTION

Peter R. Chant, Delft, Netherlands, assignor to Shell Oil Company, New York, N.Y.

Division of Ser. No. 10,546, Feb. 11, 1970, Pat. No. 3,627,706.
This application Sept. 7, 1971, Ser. No. 178,491
Int. Cl. C08g *22/44*
U.S. Cl. 23—284 **4 Claims**

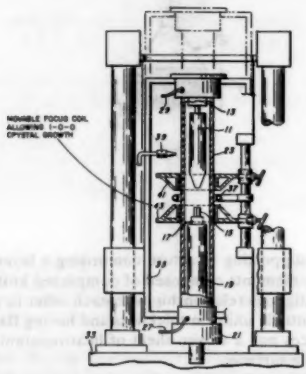


Apparatus for preparing a polyurethane foam containing granular filler which comprises: a normally vertically dispersed tubular body, a reservoir for granular filler mounted thereon, having an outlet disposed to supply granular material through the tubular body; a liquid supply conduit coupled to a source of liquid to supply liquid to a gas supply conduit coupled to a source of compressed gas and having an outlet within the tubular body at a point below the outlet of said reservoir.

3,776,703
METHOD OF GROWING 1-0-0 ORIENTATION HIGH PERFECTION SINGLE CRYSTAL SILICON BY ADJUSTING A FOCUS COIL

Gary Michael Valant, Garland, and Hoyt Randuff Guffey, McKinney, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 30, 1970, Ser. No. 93,617
Int. Cl. B01j *17/18*
U.S. Cl. 23—301 SP **11 Claims**



Silicon monocrystals having a 1-0-0 crystallographic orientation are prepared using a crystal growing apparatus of the float zone type having a heating coil and upper and lower focusing coils, wherein the silicon feed bar is held upright and moved downward as the monocrystal rod is formed. After the stem of the monocrystal has been grown, the lower focusing coil is lowered slightly, thus producing a condition more conducive to the formation of the 1-0-0 crystalline structure.

3,776,704
DISPERSION-STRENGTHENED SUPERALLOYS

John Stanwood Benjamin, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Continuation-in-part of Ser. Nos. 852,861, Aug. 25, 1969, and Ser. No. 849,133, Aug. 11, 1969, abandoned, Continuation-in-part of Ser. No. 709,700, March 1, 1968, Pat. No. 3,591,362.
This application May 17, 1971, Ser. No. 143,765
Int. Cl. C22c *31/04*
U.S. Cl. 29—182.5 **5 Claims**

Directed to a dispersion-strengthened, nickel-base superalloy produced from mechanically alloyed powder of special composition and characterized, in the consolidated, grain-coarsened condition by coarse elongated grains and by high strength over a wide range of temperatures.

3,776,705
SINTERED ALLOY HAVING WEAR RESISTANCE AT HIGH TEMPERATURE

Itar Niimi, 4-1205, Obasama, Aza, Takabari, Ooaza, Idaka-sho, Nagoya City; Kametaro Hashimoto, 29, 5-chome, Takami-cho, Toyota City; Kenzi Shitani, 3-38, 4-chome, Maruyama-cho, Toyota City; Ko Ishihara, 58-79, Kitayama, Ichiki, cho, Toyota City; Yoichi Serino, 2-1, Ekakushin-machi, Toyota City; Seishu Mitani, 11-5, Higashi-machi, Anshubaba, Kyoto City, and Kunizo Imanishi, 2-11, Toei-cho, Mizuho-ku, Nagoya City, all of Japan

Filed Aug. 17, 1971, Ser. No. 172,402
Claims priority, application Japan, Dec. 28, 1970, 45/120197
Int. Cl. B22p *3/16*; C22c *9/00*
U.S. Cl. 29—182 **2 Claims**

The present invention relates to sintered alloys having wear resistance at high temperature composed of 5 to 15 percent tin and 4 to 25 percent chromium, the balance being copper, and the alloy being sintered to more than 88 percent of theoretical density ratio.

3,776,706
ALUMINUM OXIDE BASED ARTICLES OF JEWELRY

Alma U. Daniels, Salt Lake City, Utah, and Ralph K. Iler, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

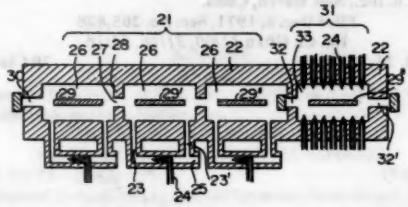
Continuation-in-part of Ser. No. 878,894, Nov. 21, 1969, abandoned. This application Dec. 15, 1971, Ser. No. 208,426
Int. Cl. B22f *5/00*; C22c *29/00*
U.S. Cl. 29—182.5 **10 Claims**

Fine-grained mixtures of 25 to 75 volume percent refractory aluminum oxide, 25 to 75 volume percent refractory titanium carbide, and 0 to 10 volume percent metal are sintered or hot-pressed to form articles of jewelry having low porosity, a metallic-grey appearance, perspiration resistance and a high luster when polished.

3,776,707
PROCESS FOR PRODUCING TEMPERED GLASS SHEET

Touru Inoue, and Kenzi Terashima, both of Nishinomiya, Japan, assignors to Nippon Sheet Glass Co., Ltd., Higashi-ku, Osaka, Japan

Filed Sept. 1, 1970, Ser. No. 68,634
Claims priority, application Japan, Sept. 4, 1969, 44/70451
Int. Cl. C03b *27/00*
U.S. Cl. 65—29 **18 Claims**



In a process for producing tempered glass sheet which includes a step of tempering treatment comprising heating a glass sheet to a temperature in the vicinity of its softening point and rapidly cooling the heated glass sheet from its surface, the improvement which comprises maintaining the glass sheet, before or after said tempering treatment, at a temperature in the range of 100° to 380°C. for a total period of time which meets the following formula

$$\int_0^H 10^{-\frac{a}{T}} dH \geq 1$$

wherein T is a temperature in degrees centigrade at an optional time,

H is a time in minutes which is calculated when T is in the range of 100° to 380°C. and

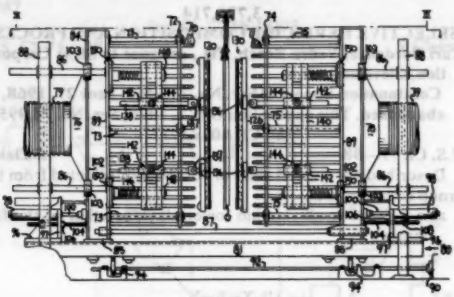
a is a number 250 after the tempering treatment and 540 before the tempering treatment,

thereby to impart a thermal history to the glass sheet, and removing those glass sheets which break by said thermal history and tempering treatment, whereby the remaining tempered glass sheets do not undergo spontaneous breakage.

3,776,708
CONTROLLING THE SHAPE OF A SHEET OF GLASS DURING COOLING

Samuel L. Seymour, Oakmont, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed June 23, 1971, Ser. No. 155,873
Int. Cl. C03b 27/00
U.S. Cl. 65—114 **22 Claims**

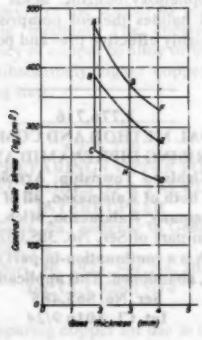


Removing heated glass sheets outside a furnace introduces a temperature gradient along the length of the glass. This gradient induces thermal warpage when the glass transfers from a shaping station to a cooling station. The present invention compensates for this warpage by supporting the glass sheet in spaced relation between opposed outline guides having complementary shapes conforming to that desired for the glass sheet marginal portion during the cooling step that heat-strengthens the shaped glass. Care is taken to avoid continuous contact of the glass with either guide to avoid glass breakage during cooling. The shaped guides are separated from one another during cooling by a maximum distance equal to the glass thickness plus the tolerance limit established by the customer. The guides may be continuous or discontinuous.

3,776,709
METHOD OF TOUGHENING GLASS SHEETS

Richard Melling, Hollywood, near Birmingham, and John Pickard, Studley, both of England, assignors to Triplex Safety Glass Company Limited, Piccadilly, London, England

Filed July 23, 1971, Ser. No. 165,052
Claims priority, application Great Britain, July 29, 1970, 36,749/70
Int. Cl. C03b 27/00
U.S. Cl. 65—114 **14 Claims**

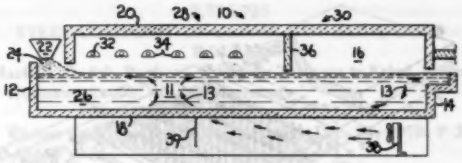


A glass sheet of thickness in the range 1.8 mm to 4 mm having a dual fracture characteristic is toughened by heating the sheet to a temperature near its softening point, exposing the surface of the hot glass sheet to gaseous chilling medium and maintaining a rate of flow of the gaseous chilling medium dependent on the glass thickness, the rate being just sufficient to give a selected heat transfer coefficient with respect to the glass in the range bounded by from 0.008 to 0.02 calories/cm^{-2}/°C^{-1}/sec^{-1} for 1.8 mm glass and from 0.006 to 0.009 calories/cm^{-2}/°C^{-1} sec^{-1} for 4 mm glass. The central tensile stress thereby induced in the glass is from 260 kg/cm^2 to 470 kg/cm^2 for 1.8 mm glass reducing to from 210 kg/cm^2 to 330 kg/cm^2 for 4 mm glass.

3,776,710
APPARATUS FOR REFINING GLASS

Leonard A. Knavish, Pittsburgh, and James R. Schornhorst, New Kensington, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 747,395, July 24, 1968, abandoned. This application Feb. 18, 1971, Ser. No. 116,368
Int. Cl. C03b 5/22
U.S. Cl. 65—134 **3 Claims**

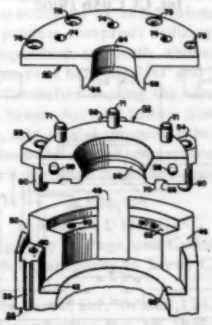


Forced cooling of the bottom of the glass in the refiner of a continuous glass-melting furnace allows changes in the thermal gradients through the glass. This reduces convection flow and convolutions in the glass and thus improves the quality of glass produced.

3,776,711
APPARATUS FOR FORMING A BLOWN BOTTLE HAVING A CHIME IN THE SHOULDER PORTION THEREOF

Elvin R. Hollingsworth, Winchester, Ind., assignor to Owens-Illinois Corporation, Winchester, Ind.

Division of Ser. No. 105,872, Jan. 12, 1971, Pat. No. 3,734,704. This application Feb. 26, 1973, Ser. No. 326,307
Int. Cl. C03b 9/14
U.S. Cl. 65—261 **5 Claims**



Apparatus for forming a bottle having a chime or groove in its shoulder portion. This is achieved by providing at the tops

of two mold halves movable mold parts forming an annular flange. The movable parts and the flange carried thereby are normally urged upwardly by coil springs but are forced downwardly against the force of the springs by a blowhead positioned over the mold halves when closed around a partially formed glob of glass (i.e., a parison). After the bottle is blown, the blowhead is removed, permitting the aforesaid movable mold halves to move upwardly under the force of the springs to permit the mold halves to open and release the blown bottle having a chime in its shoulder portion.

3,776,712

TREATMENT OF GLASS SHEET

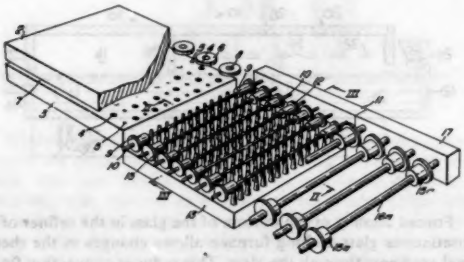
Dennis Wilde, Hoscar, nr. Ormskirk, England, assignor to Pilkington Brothers Limited, Liverpool, Lancashire, England

Continuation of Ser. No. 56,251, July 20, 1970, which is a continuation of Ser. No. 632,795, April 21, 1967. This application July 10, 1972, Ser. No. 270,161

Claims priority, application Great Britain, Apr. 25, 1966, 18,074/66

Int. Cl. C03b *27/00*

U.S. Cl. 65—348 **3 Claims**



Toughening of advancing glass sheets is effected in two stages; in the first the glass is supported on a gaseous support and thereafter when the underface of the glass is no longer deformable the advancing glass is mechanically supported as quenching is completed, clearance of cullet being facilitated in the final quenching stage.

3,776,713

KCL-PHOSPHATE GRANULES

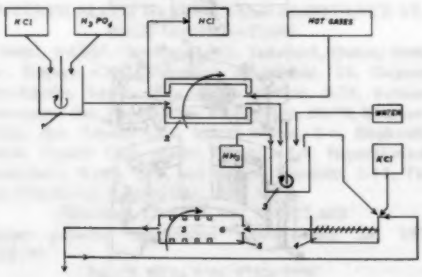
Bernard Quanquin; Honore Trimbach, both of Grande Couronne, and Pierre Dumont, Cleon, all of France, assignors to Azote et Produits Chimiques S.A., Toulouse, France

Filed June 9, 1969, Ser. No. 831,464

Claims priority, application France, June 20, 1968, 68155735

Int. Cl. C05b *19/00*

U.S. Cl. 71—33 **14 Claims**



To produce hard, abrasion-resistant, substantially spherical granules consisting essentially of potassium chloride and phosphate, particulate potassium chloride is agglomerated with an aqueous solution containing as the essential binding agent, a complex mixture of ortho-phosphates and condensed phosphates produced by reacting potassium chloride in orthophosphoric acid at above 180° C. To improve the granulation yield having the desired particle sizes, ammonia is added to the mixture to be granulated either before or during granulation.

3,776,714

SELECTIVE HERBICIDE COMPOSITION AND PROCESS

Carl Bordenca, Vedra Beach, Fla., assignor to SCM Corporation, Cleveland, Ohio

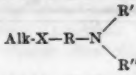
Continuation-in-part of Ser. No. 740,458, June 27, 1968, abandoned. This application Oct. 7, 1970, Ser. No. 78,995

Int. Cl. A01n *9/12*

U.S. Cl. 71—98 **5 Claims**

Described are a novel class of compounds selected from the group consisting of:

a. a β-di-lower alkylamino lower alkylene ether of the formula:



where Alk is a saturated branched chain alkyl group containing from 4 to 16 carbon atoms, X is sulfur or oxygen, R is lower alkylene and R′ and R″ are like or dissimilar lower alkyl and

b. stable salts thereof.

Processes for selectively controlling undesirable plant growth by application of the compounds falling within the scope of this invention to a plant environment are also described. Crop and grass plants are generally not adversely affected by the compounds when such compounds are used in concentrations which will kill pest weeds.

The compositions and processes of the invention are advantageous in that undesirable pest weeds such as crabgrass, mustard, pigweed, barn grass, and morning glory are substantially eliminated in fields where valuable crops such as bluegrass, corn, cotton, soybeans, and wheat are planted and are grown.

3,776,715

HALOPHENOXY BENZOIC ACID HERBICIDES

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 819,412, April 25, 1969, Pat. No. 3,652,645. This application Nov. 1, 1971, Ser. No. 194,479

Int. Cl. A01n *9/20*

U.S. Cl. 71—111 **10 Claims**

2-Nitro-5-(halophenoxy)benzoic acids and esters, salts, amides, and acyl halides thereof comprise a class of compounds that are highly effective pre- and post-emergence herbicides.

3,776,716

HERBICIDAL METHOD AND COMPOSITIONS COMPRISING DIPHENAMID AND 2,4-D

Alan J. Lemin, Richland Township; Arnolds Steinhards, and George Swank, both of Kalamazoo, all of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. No. 385,032, July 24, 1964, abandoned, which is a continuation-in-part of Ser. No. 98,316, March 27, 1961, abandoned. This application Oct. 10, 1969, Ser. No. 865,485

Int. Cl. A01n *9/24*

U.S. Cl. 71—117 **4 Claims**

Herbicidal methods and compositions containing, as the essential active ingredients, an N,N-disubstituted-α,α-diphenylacetamide and 2,4-dichlorophenoxyacetic acid.

3,776,717

METHOD FOR PROCESSING OF RED MUD

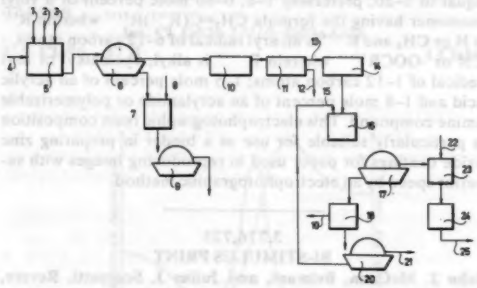
Laszlo Kapolyi, Budapest; Ferenc Lazar, Tatabanya; Bela Galauner, Tatabanya; Laszlo Dzsida, Tatabanya; Gyorgy Vamos, Tatabanya; Laszlo Wagner, and Alfred Pogany, both of Budapest, all of Hungary, assignors to Tatabanyai Szenbanyak, Tatabanya, Hungary

Filed Dec. 2, 1971, Ser. No. 204,216

Claims priority, application Hungary, Dec. 4, 1970, TA-1907

Int. Cl. C21b *13/08*

U.S. Cl. 75—38 9 Claims



The red mud by-product of aluminum manufacture is processed by first removing its alkali metal content by causticization of a slurry thereof with burnt lime in the presence of humic acid or derivative thereof. From the remaining solids iron can be recovered such as by reduction and smelting, where the humic acid-containing ingredient, a soft coal, can be utilized for its carbon content. From the remaining slag of the smelting either an aluminaceous refractory cement is prepared or the solids are converted into a spontaneously disintegrating dicalcium silicate for which the aluminum content can be recovered. In the latter case the last remaining solids can be used in the manufacture of portland cement.

3,776,718

RECOVERY OF COPPER AND STEEL FROM SCRAP

Vance G. Leak, and Morris M. Fine, both of Minneapolis, Minn., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed July 13, 1972, Ser. No. 271,340

Int. Cl. C22b *7/00, 15/00*

U.S. Cl. 75—63 13 Claims

Scrap items containing copper and iron in physical admixture, such as electrical and electronic scrap, are pretreated with an aqueous reagent, such as an alkali metal sulfate or silicate, prior to recovery of the copper by preferential melting in an inert, liquid medium. The chemical pretreatment reduces the tendency of copper to alloy or braze with the iron and results in a substantially higher copper recovery in the preferential melting step.

3,776,719

METHOD OF PREPARING COPPER FOR USE IN THE ARCING ELECTRODES OF A VACUUM CIRCUIT INTERRUPTER

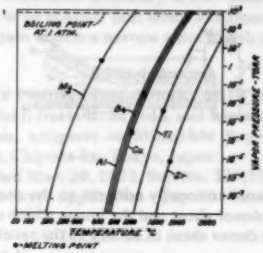
Stephen Foldes, Media, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 30, 1971, Ser. No. 203,242

Int. Cl. C22b *15/14*

U.S. Cl. 75—76 4 Claims

A method of preparing copper for use in the electrodes of a vacuum-type circuit interrupter comprising the steps of: melting copper in a vacuum; adding to the molten copper a small amount of magnesium that reacts with any oxygen present in the copper to form magnesia, which floats to the surface of the liquid copper-magnesium solution; maintaining while in a vacuum the temperature of the solution above its melting point for a sufficient time to evaporate from the solution all of



the magnesium present therein that has not reacted with the oxygen therein; and then directionally cooling and solidifying said copper to force residual magnesia trapped therein to move to the surface of the liquid copper.

3,776,720

STEEL COMPOSITION CAPABLE OF BEING COLD ROLLED

Maria B. Dudek, Bochum, Germany, assignor to Fried. Krupp Huttenwerke AG, Bochum, Germany

Filed Dec. 27, 1971, Ser. No. 212,794

Claims priority, application Germany, Dec. 24, 1970, P 20 63 666.2

Int. Cl. C22c *39/16, 39/54*

U.S. Cl. 75—126 M 14 Claims

A stainless semi-ferritic steel composition suitable for forming ribbing-free cold strip said steel composition having an austenite content of between about 10 and 40 percent, at temperatures above Ac_1, said steel composition comprising:

Up to 0.12 % by weight carbon
13–23 % by weight chromium
0 – 2 % by weight molybdenum
0–0.5 % by weight nickel
Up to a maximum of 1.0 % by weight silicon
Up to a maximum of 0.35 % by weight manganese
Up to a maximum of 0.010 % by weight sulphur
0.025–0.060 % by weight phosphorus
0.020–0.060 % by weight arsenic,
at least 0.050 % of said arsenic and said phosphorus being combined arsenic and phosphorus,
the balance being iron plus other common impurities;

a process for obtaining a semi-ferritic stainless steel which is still air-hardening, said stainless steel having a austenite content of between 10 and 40 percent at temperatures above Ac_1 and capable of being cold rolled into a strip of slight thickness, which strip is characterized by being substantially non-washboarding, which process comprises utilizing as the steel composition the composition set forth above, maintaining the same at a temperature of between 700° and 780°C for between 2 and 10 hours, thereafter heating the same to a hot rolling temperature just below Ac_1 and rolling down to the final hot rolling thickness, said steel composition being worked either as a crude ingot from the solidus temperature or in the form of a bloom in which it is worked from the cogging temperature.

3,776,721

MANIFOLD IMAGING

Ivar T. Krohn; Geoffrey A. Page, and Gedeminas J. Reinis, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation-in-part of Ser. No. 609,124, Jan. 13, 1967, abandoned. This application Dec. 18, 1970, Ser. No. 99,712

Int. Cl. G03g *13/22, 17/00*

U.S. Cl. 96—1 R 19 Claims

An imaging system wherein a structure comprising a cohesively weak imaging layer sandwiched between a donor sheet

and a receiver sheet is employed. The sandwich is placed in an electrical field and exposed to extended imagewise activating electromagnetic radiation. The extended exposure causes the

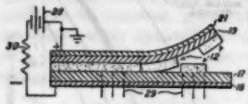


image which conventionally adheres to the receiver sheet to adhere to the donor sheet and the image which conventionally adheres to the donor sheet to adhere to the receiver sheet.

3,776,722

ELECTROPHOTOGRAPHIC METHOD OF IMAGEWISE PARTICLE TRANSFER EMPLOYING ALTERNATING MODULATED FIELD

Marcus Cantarano, No. 47, av. F. Roosevelt, Bat. B. Thiais 94, France

Continuation-in-part of Ser. No. 715,313, March 22, 1968, abandoned, which is a continuation-in-part of Ser. No. 613,792, April 18, 1967, abandoned. This application June 14, 1971, Ser. No. 152,962

Int. Cl. G03g *13/14, 13/16*

U.S. Cl. 96—1 R **14 Claims**

A process and a device for electrophotographic reproduction using a photoconductive layer placed in contact with a uniform layer of developer between two electrodes. An alternatively modulated voltage is applied to the electrodes.

3,776,723

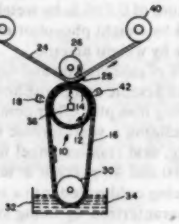
IMPROVED LIQUID TRANSFER ELECTROPHOTOGRAPHIC DEVELOPMENT PROCESS

Stephen F. Royka, Fairport, and Ernest A. Weiler, Rochester, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Aug. 9, 1972, Ser. No. 279,164

Int. Cl. G03g *13/10, 13/14*

U.S. Cl. 96—1 LY **11 Claims**



An improved liquid transfer development process comprising:

electrically charging the photoconductive surface of an imaging member comprising a photoconductive insulating layer overlying a transparent electrically conductive substrate;

exposing the photoconductive surface of said imaging member through said transparent substrate to a pattern of light and shadow;

contacting the photoconductive surface of said imaging member with a developer-laden web, said developer comprising particulate toner dispersed in an insulating liquid carrier;

contacting said developer-laden web with an image receiving web to selectively deposit particulate toner in conformance with said pattern of light and shadow; and,

separating said image receiving web from said developer-laden web.

3,776,724

ELECTROPHOTOGRAPHIC COMPOSITION OF ZINC OXIDE AND A RESIN BINDER

Athar M. Usmani, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 84,102, Oct. 26, 1970, abandoned. This application Sept. 22, 1971, Ser. No. 182,854

Int. Cl. G03g *5/00*

U.S. Cl. 96—1.8 **26 Claims**

The electrophotographic resin compositions disclosed herein comprise 10–96 mole percent of an acrylate ester having the formula $CH_2=C(R)COOR'$, wherein R is H, CH_3 or C_2H_5 and R′ is an alkyl radical of the formula C_nH_{2n+1} with n equal to 1–20, preferably 1–8; 0–86 mole percent of a vinyl monomer having the formula $CH_2=C(R''')R''''$ wherein R‴ is H or CH_3 and R⁗ is an aryl radical of 6–12 carbon atoms, -CN or -OOCR⁗⁗ wherein R⁗⁗ is alkyl, cycloalkyl or aryl radical of 1–12 carbon atoms; 1–5 mole percent of an acrylic acid and 1–8 mole percent of an acrylamide or polymerizable amine compound. This electrophotographic resin composition is particularly suitable for use as a binder in preparing zinc oxide coatings for paper used in reproducing images with superior speed by an electrophotographic method.

3,776,725

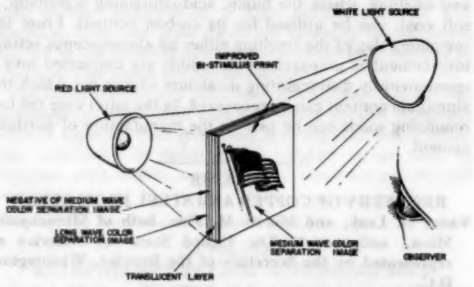
BI-STIMULUS PRINT

John J. McCann, Belmont, and Julius J. Scarpetti, Revere, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Dec. 1, 1971, Ser. No. 203,688

Int. Cl. G03c *7/00*

U.S. Cl. 96—2 **21 Claims**



An improved bi-stimulus print is disclosed which provides more faithful rendition of the colors perceived therein. One perceives color in an image recorded on a bi-stimulus print by illuminating the front of the bi-stimulus print with light having one wavelength distribution and by simultaneously illuminating the back with light having another wavelength distribution and viewing, together, an image conveyed from the front by reflected light and another image conveyed from the back by transmitted light. A negative of the front image located on the back of the improved bi-stimulus print in precise registration with the other images compensates for the modulation of the transmitted light by the front image. Improved bi-stimulus anaglyphs are also described.

3,776,726

COLOR DIFFUSION TRANSFER PHOTOGRAPHIC PRODUCTS, PROCESSES AND COMPOSITIONS

Edwin H. Land, Cambridge, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 24, 1972, Ser. No. 247,025

Int. Cl. G03c *7/00*

U.S. Cl. 96—3 **50 Claims**

Diffusion transfer process film units are disclosed which include a viscous processing composition including a film-form-

ing, viscosity-providing polymer and colloidal silica. Substantially increased viscosity results from the inclusion of the colloidal silica. Color images, particularly multicolor integral negative-positive reflection prints, are obtained using the disclosed film units.

3,776,727

TRANSMISSION HOLOGRAMS

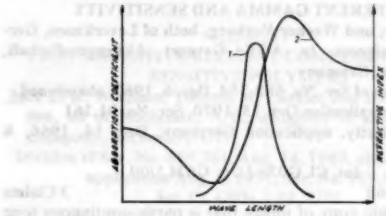
Heinrich Nassenstein, Leverkusen, and Joachim Eggers, Cologne, Stammheim, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

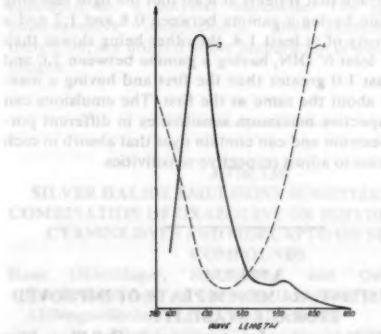
Filed June 16, 1969, Ser. No. 833,603

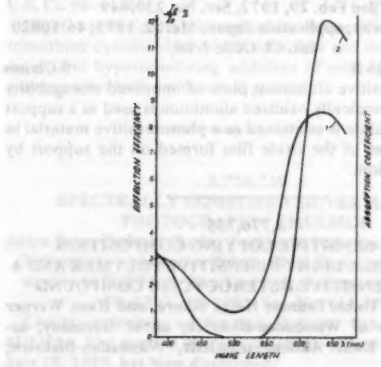
Claims priority, application Germany, June 29, 1968, P 17 72 756.9

Int. Cl. G02b *27/10*; G03c *5/04*

U.S. Cl. 96—27 H 1 Claim







A transmission hologram which is reconstructable by white light is produced by the color processing in which the hologram itself is colored so as to obtain a high diffraction efficiency in the wave length region of maximum absorption and dispersion of the dye stuff which is used for coloring the holograms. Outside of this region of maximum absorption and dispersion the diffraction efficiency is low. Thus the transmission hologram is so colored that when illuminated with white light the hologram selects a narrow wave length region.

3,776,728

METHOD OF PRODUCING OFFSET PRINTING PLATE

Shigeyoshi Suzuki; Norio Kobayashi, and Kiyoshi Futaki, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Marunouchi, Chiyoda-ku, Tokyo, Japan

Filed Mar. 30, 1972, Ser. No. 239,756

Claims priority, application Japan, Mar. 20, 1971, 46/19001

Int. Cl. G03c *5/54*

U.S. Cl. 96—29 L 7 Claims

An offset printing plate of improved printability is provided utilizing the silver complex salt diffusion transfer process by treating an offset master plate containing an image-receiving layer composed of 100 parts by weight of a physical development center and not more than 30 parts by weight of a high-molecular-weight compound, with a transfer developer solution consisting essentially of a developing agent, a solvent for a silver halide, and at least one organic heterocyclic compound such as 3-pentyl-benzoxazoline-2-thione, 5-phenyl-2-mercapto-1,3,4-oxadiazole or 3-mercapto-4-methyl-5-pentyl-1,2,4-triazole.

3,776,729

PHOTOSENSITIVE DIELECTRIC COMPOSITION AND PROCESS OF USING THE SAME

M. Frank Levy, Los Gatos, Calif., and George P. Schmitt, Vestal, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1971, Ser. No. 117,808

Int. Cl. G03c *1/68*

U.S. Cl. 96—35.1 15 Claims

A photosensitive dielectric composition comprising a first polymer system formed by the photopolymerization of a multi-functional vinyl monomer, e.g., pentaerythritol tetraacrylate, in the presence of a partially cured second polymer system. The first polymer system occludes therein the second polymer system which has been finally cured, i.e., cross-linked by an ionic mechanism, subsequent to the polymerization of the first polymer system, e.g., the second polymer system can be an epoxy resin. One process for forming the above composition comprises applying a solution of pentaerythritol tetraacrylate monomer, a photosensitizer, the epoxy resin cured to the B-stage and a curing agent for the epoxy resin onto a support, selectively exposing the same to radiation to polymerize the tetraacrylate monomer, washing the same in an appropriate solvent to remove the components in areas unexposed to light and baking the assembly to cross-link the epoxy resin which is occluded within the tetraacrylate polymer.

3,776,730

TREATMENT OF AN IMAGEWISE EXPOSED AND DEVELOPED SILVER HALIDE EMULSION LAYER CONTAINING A CATALASE ACTIVE OR PEROXIDE ACTIVE CATALYST WITH PEROXIDE

Reinhart Matejec; Rudolf Meyer; Franz Moll; Erwin Ranz, all of Leverkusen, and Edith Weyde, Kurten, all of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Nov. 15, 1971, Ser. No. 198,961

Claims priority, application Germany, Nov. 17, 1970, P 20 56 360.4

Int. Cl. G03c *5/26*

U.S. Cl. 96—50 R 6 Claims

A process for the production of positive photographic images comprising the steps of imagewise exposing a light-sen-

sitive silver salt emulsion layer, photographically developing to form a negative silver image in the exposed areas, treating the exposed and developed layer with a peroxide compound, the peroxide compound is left to act on the layer until it has been decomposed at the negative silver image, and forming a positive image by decomposition of the undercomposed peroxide compound in the unexposed areas of the layer.

3,776,731

DEVELOPER FOR PHOTOGRAPHIC NEGATIVES USED FOR PRINTING

Haruhiko Iwano; Katsumi Hayashi; Yoo Iljima, and Isao Shimamura, all of Minami Ashigara-Machi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

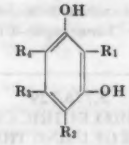
Filed Dec. 23, 1971, Ser. No. 211,756

Claims priority, application Japan, Dec. 24, 1970, 45/118087

Int. Cl. G03c *5/30*

U.S. Cl. 96—66.4 **8 Claims**

A developer for photographic films used for half-tone printing which contains at least one compound represented by the following formula in combination with more than 0.008 mols of sulfite ions:



wherein R_1 and R_3 each represent a hydrogen atom, an alkyl group having one to two carbon atoms, a carboxyl group, an acetyl group having one to two carbon atoms or a hydroxyl group, and R_2 and R_4 each represent a hydrogen atom, a halogen atom, an alkyl group having one to six carbon atoms, a carboxyl group, a sulfo group, an alkoxy group having one to two carbon atoms, an acetyl group having one to two carbon atoms or a hydroxyalkyl group having one to two carbon atoms.

3,776,732

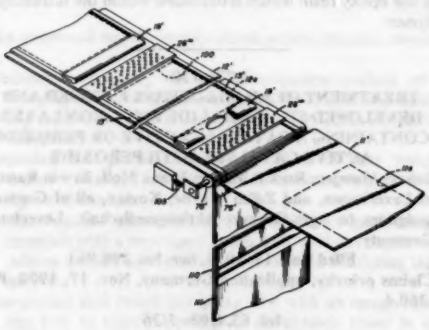
LIQUID TRAPPING MEANS FOR IN-CAMERA PROCESSED PHOTOGRAPHIC PRODUCT

David A. Frost, Rochester, and Stanley R. Schieven, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 15, 1969, Ser. No. 841,865

Int. Cl. G03c *1/48*

U.S. Cl. 96—76 C **6 Claims**



For trapping and retaining the excess processing fluid distributed between an exposed photosensitive sheet and a second sheet superposed therewith when the two are moved longitudinally between a pair of pressure-applying members to rupture a pod containing an amount of processing fluid in excess of that required to process the exposed latent image, the trailing end of at least one of said sheets is embossed to provide a plurality of protuberances for separating the opposed surfaces of the trailing ends of said sheets as they pass through the pressure-applying members and provide a space for retaining the excess processing solution. While each individual protuberance might be readily compressible, the arrangement of protuberances is such that there is a sufficient number of them between the pressure-applying members at any one time to effect a significant separation of said pressure-applying members for maintaining a separation between the superposed surfaces of the trailing ends of said sheet elements as they pass between the pressure-applying members.

3,776,733

PHOTOGRAPHIC MATERIAL OF EMULSIONS OF DIFFERENT GAMMA AND SENSITIVITY

Karl Lohmer, and Werner Verburg, both of Leverkusen, Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 688,354, Dec. 6, 1967, abandoned. This application Oct. 15, 1970, Ser. No. 81,161

Claims priority, application Germany, Dec. 14, 1966, A 54364

Int. Cl. G03c *1/76*; **G03f** *5/00*

U.S. Cl. 96—68 **3 Claims**

Photographic copy of image that is partly continuous tone and partly line is made with a single exposure of entire image on combination of two silver halide emulsions carried by a supporting surface that reflects at least half the light reaching it, one emulsion having a gamma between 0.8 and 1.2 and a maximum density of at least 1.4, the other being slower than the first by at least 6° DIN, having a gamma between 2.0 and 4.0 and at least 1.0 greater than the first and having a maximum density about the same as the first. The emulsions can have their respective maximum sensitivities in different portions of the spectrum and can contain dyes that absorb in such spectrum portion to adjust respective sensitivities.

3,776,734

PHOTOSENSITIVE ALUMINUM PLATE OF IMPROVED STORAGE STABILITY

Isao Kumasaka, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Feb. 29, 1972, Ser. No. 230,449

Claims priority, application Japan, Mar. 2, 1971, 46/10820

Int. Cl. G03c *1/94*

U.S. Cl. 96—86 R **9 Claims**

A photosensitive aluminum plate of improved storagability in which an anodically oxidized aluminum is used as a support and a silver halide is contained as a photosensitive material in the micropores of the oxide film formed on the support by anodic oxidation.

3,776,735

LIGHT-SENSITIVE COPYING COMPOSITION CONTAINING A LIGHT INSENSITIVE POLYMER AND A LIGHT SENSITIVE HETEROCYCLIC COMPOUND

Sigrid Bauer, Hahn/Taunus; Helga Sikora, and Hans Werner Frass, both of Wiesbaden-Biebrich, all of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

Filed Dec. 28, 1971, Ser. No. 213,154

Int. Cl. G03c *1/68*

U.S. Cl. 96—115 R **4 Claims**

The invention relates to a light-sensitive copying composition comprising a high molecular weight light-insensitive

polymer and a light-sensitive nitrogen compound containing at least one six-membered N-heterocyclic nucleus and at least one benzene nucleus.

3,776,736

STABILIZED PHOTORESIST COMPOSITION

Edmund Benjamin Davidson, Yardley, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 7, 1972, Ser. No. 278,265
Int. Cl. G03c *1/68*
U.S. Cl. 96—115 R 4 Claims

A photoresist composition comprising an air-drying alkyd resin, a photosensitizer, and a stabilizer consisting of methylthio-m-cresol or methylthio phenol.

3,776,737

PHOTOSENSITIVE ELEMENT COMPRISING LIGHT-SENSITIVE POLYMERS

Jack L. R. Williams; Thomas M. Laakso, and Douglas G. Borden, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 850,261, Aug. 14, 1969, abandoned. This application Aug. 5, 1971, Ser. No. 169,543
Int. Cl. G03c *1/68*, *1/70*
U.S. Cl. 96—115 R 8 Claims

A novel class of light-sensitive polymers contains recurring cyclohexadienedicarboxylate units as an integral part of, or appended to, a polymer backbone. The polymers, and photosensitive compositions and elements prepared therefrom, are utilized in the preparation of photomechanical images.

3,776,738

SILVER HALIDE EMULSIONS SENSITIZED WITH A COMBINATION OF OXAZOLINE OR DIHYDROOXAZINE CYANINE DYES AND MERCAPTO OR SELENOL COMPOUNDS

Hans Ohlschlager, Hahnenweg, and Oskar Riester, Goetheplatz, both of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Filed Feb. 8, 1972, Ser. No. 224,596
Int. Cl. G03c *1/14*
U.S. Cl. 96—126 6 Claims

Light sensitized photographic materials containing trimethine cyanine dyes of the oxazoline and dehydrooxazine series and hypersensitizing additives of mercapto or selenol compounds which contain acid groups.

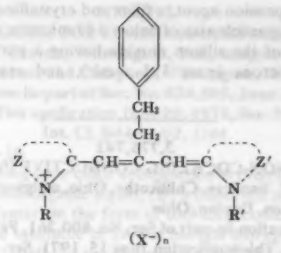
3,776,739

SPECTRALLY SENSITIZED SILVER HALIDE PHOTOGRAPHIC EMULSION

Akira Sato; Tadashi Ikeda; Yoshiyuki Nakazawa; Yashuharu Nakamura, and Haruo Takei, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Feb. 16, 1971, Ser. No. 115,550
Claims priority, application Japan, Feb. 16, 1970, 45/13284. The portion of the term of this patent subsequent to July 18, 1989, has been disclaimed.
Int. Cl. G03c *1/18*
U.S. Cl. 96—137 5 Claims

A spectrally sensitized silver halide photographic emulsion containing at least one sensitizing dye represented by the following general formula



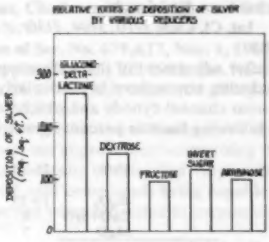
wherein Z and Z′, each represents the atomic group necessary to complete a benzothiazole nucleus, a benzoselenazole nucleus or a naphthothiazole nucleus, R and R′ each represents an alkyl group, a carboxyalkyl group or a sulfoalkyl group, at least one of said R and R′ being a carboxyalkyl or a sulfoalkyl group, X represents an anion and *n* is 0 or 1, is disclosed. The emulsion is highly sensitive to red light.

3,776,740

ELECTROLESS SILVERING COMPOSITION AND METHOD

Christian Sivertz, 1123 Sunset Ave., and Joseph F. Soltys, 1094 Southdale Rd., both of London, Ontario, Canada

Continuation-in-part of Ser. No. 98,716, Dec. 16, 1970, abandoned. This application July 13, 1972, Ser. No. 271,380
Int. Cl. C23c *3/02*
U.S. Cl. 106—1 14 Claims



Higher rates of silver deposition from silvering compositions such as ammoniacal silver nitrate solutions are achieved by employing as a reducer an aldonic acid having 4 – 7 carbon atoms, or a salt or lactone thereof. Preferred reducers are gluconic acid, sodium gluconate, sodium glucoheptonate or glucono delta lactone. Since the reducer is stable in the strong base normally employed in silvering, it can be added to the strong base prior to admixing the strong base with the silvering solution.

3,776,741

FLAME-PROOF PROTECTIVE COATING FOR ELECTRICAL FILM RESISTORS

Lawrence G. Bockstie, Jr., Bradford, Pa., assignor to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 724,220, April 25, 1968, abandoned. This application Dec. 28, 1970, Ser. No. 102,150The portion of the term of this patent subsequent to Aug. 10, 1988, has been disclaimed.
Int. Cl. C09d *5/18*
U.S. Cl. 106—15 FP 22 Claims

A coating composition capable of producing coatings on resistors which do not tend to crack during and following curing comprising a prehydrolyzed tetraalkyl orthosilicate, aluminum

oxide, a suspension agent, a filler and crystalline silicon dioxide having a particle size of below 149 microns, no more than 65 percent of the silicon dioxide having a particle size less than 44 microns (pass 325 mesh), and resistors coated therewith.

3,776,742

NON-COCKLING CONDUCTIVE INK

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 800,261, Feb., 1869, abandoned. This application June 15, 1971, Ser. No. 153,426

Int. Cl. C09d *11/00, 11/02, 11/16*

U.S. Cl. 106—22 **8 Claims**

An electrically conductive aqueous base ink for use in printing on a cellulose containing base member by formation of discrete droplets to provide a non-cockled print is composed of a water soluble dye, a water soluble inorganic conductive material in an amount of between 1% to 20% and compatible with the dye, a water soluble polyol present in an amount between 5% to 50%, an organic crystallizable material which acts temporarily as a plasticizer for cellulose and present in an amount between 5% and 20%, and the balance water, the ink being substantially free of particulate material larger than about 1.5 mils in diameter.

3,776,743

GLASS

Hendrikus Johan Lodewijk Trap, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporaton, New York, N.Y.

Filed Apr. 1, 1971, Ser. No. 130,467

Claims priority, application Netherlands, Apr. 16, 1970, 7005457The portion of the term of this patent subsequent to May 16, 1989, has been disclaimed.

Int. Cl. C03c *3/10, 3/04, 3/30*

U.S. Cl. 106—53 **1 Claim**

Glass which after adjustment of the surface conductivity by heating in a reducing atmosphere is particularly suitable for use in a continuous channel dynode and which has a composition within the following limits in percent by weight:

SiO_2	20–48	PbO	25-35	
				combined
Al_2O_3	5	Bi_2O_3	10-35	45–70
B_2O_3	3	CaO+SrO	8	
Na_2O	4	MgO	7	
	Combined			
K_2O	5 2–8	Sb_2O_3	2	
Li_2O	5			

3,776,744

ALUMINA-TRANSITION METAL OXIDE CERAMIC PRODUCTS OF ENHANCED DUCTILITY

Ronald L. Clendenen, Orinda, Calif., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 74,181, Sept. 21, 1970, abandoned, which is a continuation-in-part of Ser. No. 735,541, June 10, 1968, abandoned. This application June 15, 1972, Ser. No. 263,014

Int. Cl. C04b *35/10, 35/60*

U.S. Cl. 106—73.4 **3 Claims**

High-density, finely grained aluminous ceramic compositions are produced by maintaining mixtures of finely divided alumina precursors and transition metal oxide precursors under pressure at a temperature high enough to decompose the precursors to ceramic oxides but below the melting point of the resulting ceramic oxide composition. The novel ceramic compositions produced by this process are characterized by enhanced ductility at temperatures below their melting points, and are therefore useful in the production of ceramic objects by deformation processes of hot forming and the like. They can be heated to temperatures nearer their melting points for crystal growth and creep-resistance.

3,776,745

LITHIUM-BOROVANADATE GLASS FOR USE IN A SECONDARY ELECTRODE

Hendrikus Johan Lodewijk Trap, Emmasingel, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 862,446, Sept. 30, 1969, abandoned. This application Nov. 11, 1971, Ser. No. 197,940

Claims priority, application Netherlands, Oct. 2, 1968, 6814050

Int. Cl. C03c *3/14;* **H01b** *1/06;* **C03c** *3/30*

U.S. Cl. 106—54 **2 Claims**

Glass particularly suitable for use in a secondary emission electrode and comprising Li_2O, V_2O_5, B_2O_3 and possibly CaO and SiO_2, the composition in % by weight satisfying the following conditions:

$10 < V_2O_5 < 56$

$25 < B_2O_3 < 75$

$32 < (B_2O_3+SiO_2) < 75$

$9 < (Li_20+CaO) < 28$

$(Li_20+CaO) < 44/35\ (B_2O_3+SiO_2) - 26.4$

3,776,746

PROCESS FOR MANUFACTURE OF RIGID FOAMS

Kinichi Abe, 633, 1-chrome, Kasugijrnya-machi, Kawasaki, Japan

Filed June 1, 1971, Ser. No. 148,990

Claims priority, application Japan, June 4, 1970, 45/48252; June 26, 1970, 45/55209

Int. Cl. C04b *31/00*

U.S. Cl. 106—75 **16 Claims**

A process for the manufacture of a rigid foam out of a slurry containing an alkali silicate, or foaming agent, a substance which produces a gradual reaction with the alkali silicate, and other additives. It is essential that dinitrosopentamethylenetetramine be included in the slurried mixture. Such an undesired decomposition residuum as formaldehyde that may be produced by this compound is removable either by the combined use of a ureal substance or by an additional heat treatment of the slurry. To be turned into a rigid foam, this slurry is agitated at a temperature less than the boiling point thereof, succeedingly foamed and hardened, and dried.

3,776,747

HIGH TEMPERATURE RESISTANT COATING

Norman Edmund Ballard, Derby, England, assignor to Rolls-Royce (1971) Limited, Derby, England

Continuation-in-part of Ser. No. 136,537, April 22, 1971, abandoned. This application Feb. 10, 1972, Ser. No. 225,062

Claims priority, application Great Britain, Apr. 24, 1970, 19,761/70

Int. Cl. C09d *1/02*

U.S. Cl. 106—84 **3 Claims**

A composition for coating steel components, such as the compressor parts of gas turbine engines consisting essentially of from two parts to half a part by weight of potassium silicate; from one part to two parts by weight of finely divided aluminum powder, from one quarter to three quarters of a part by weight of a polyhydroxy alcohol and sufficient water to produce a viscosity of up to and including forty seconds when measured on a British Standard number 4 flow cup at 20° C.

3,776,748

METHOD OF PREPARING SURFACING COMPOSITION FOR ROADS; AIRFIELD RUNWAYS AND THE LIKE

Dennis Maunder Richards, Cornwall, England, assignor to English Clays Lovering Pochin & Company Limited, St. Austell, Cornwall, England

Continuation of Ser. No. 811,166, March 27, 1969, abandoned. This application June 20, 1972, Ser. No. 264,420

Int. Cl. C09d *3/24;* **C08h** *13/00, 17/02*

U.S. Cl. 106—280 **9 Claims**

A method of producing artificial roadstones for use in bituminous surfacing compositions for roads, airfield runways and

the like. The artificial road-stones are produced by a method which comprises the steps of (a) extruding a mixture comprising water, a bonding material, at least 50 percent by weight of which is composed of materials capable of forming on reaction with water stable, substantially insoluble, hydrated calcium silicates and/or calcium aluminates, and a granular aggregate, and (b) hardening the extruded composition to form the desired artificial roadstones. The bonding material constitutes from 5 to 100 percent by weight of the solids in the mixture to be extruded and has a particle size distribution such that substantially all thereof passes a No.100 mesh British Standard sieve and the granular aggregate constitutes from 0 percent to 95 percent by weight of the solids in the mixture and is composed wholly or substantially wholly of material passing a ⅜ inch mesh British Standard sieve and retained on a No.100 mesh British Standard sieve.

3,776,749

DIARYLIDE PIGMENT COMPOSITIONS

Robert Bruce McKay, Kilmarnock, and Gordon Frank Bradley, Paisley, both of Scotland, assignors to Ciba-Geigy AG, Basle, Switzerland

Filed May 6, 1971, Ser. No. 141,004

Claims priority, application Great Britain, May 6, 1970, 21,754/70

Int. Cl. C08h *17/44*

U.S. Cl. 106—288 Q **44 Claims**

A process in which a diarylide pigment composition is produced by coupling a tetrazotised pigment benzidine with a pigment coupling agent, preferably an acetoacetarylamide, and incorporating in the pigment a water-soluble coupled diarylide dyestuff, preferably prior to the isolation and drying of the pigment, and the diarylide pigment composition having better colour strength and transparency properties than conventional diarylide pigments when incorporated in printing inks.

3,776,750

CARBON BLACK PELLETING PROCESS

King L. Mills, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1972, Ser. No. 251,894

Int. Cl. C09c *1/58*

U.S. Cl. 106—307 **9 Claims**

A two-stage process for pelleting carbon black; in the first stage, an oil-water-carbon black mixture is formed; in the second stage, an aqueous solution is added and the black is pelleted to form soft pellets.

3,776,751

METHOD OF PRODUCING REINFORCED THERMOPLASTIC MATERIALS

John Howard Davis, Bengeo, and Brian Norman Hendy, Welwyn, both of England, assignors to Imperial Chemical Industries Limited, London, England

Continuation-in-part of Ser. No. 843,226, July 18, 1969, abandoned. This application Apr. 26, 1971, Ser. No. 137,705

Claims priority, application Great Britain, Aug. 6, 1968, 34,526/68

Int. Cl. B32h *3 1/18;* **B32b** *17/10*

U.S. Cl. 117—4 **6 Claims**

Depositing a copolymer of acrylonitrile and aromatic olefin from an emulsion onto a glass-fibre reinforcing material, separating and drying the coated reinforcing material.

3,776,752

PROCESS FOR FINISHING SURFACES

James Milton Craven, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 834,505, June 18, 1969, abandoned. This application June 29, 1971, Ser. No. 158,093

Int. Cl. B44d *1/02, 1/44*

U.S. Cl. 117—10 **8 Claims**

A novel wiping-type color composition is provided containing (A) a volatile organic liquid, (B) a dispersed polymer (e.g. an acrylic polymer) in the form of tiny solid coalescible particles which are insoluble in (A) at normal storage conditions and will not coalesce when applied at 25°C. and (C) a dispersed pigment which is present in an amount such that the (B):(C) weight-ratio is about 1:99 to 40:60. The process of applying this organosol is also claimed.

3,776,753

SYNTHETIC SUEDE FABRICS

Emile E. Habib, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Apr. 30, 1971, Ser. No. 139,234

Int. Cl. D44d *1/44;* **B06n** *3/00*

U.S. Cl. 117—11 **10 Claims**

The disclosure describes synthetic, leathery suede-like fabrics comprising a substrate and a fiber flock surface wherein the flock fibers have a coating of an abraded polymer thereon. A process for preparing these suedes is disclosed. Such synthetic suedes have improved properties over natural suedes including washability and they can be prepared in a variety of sizes and colors.

3,776,754

PRODUCTION OF LUMINESCENT SCREENS

Steven Levinos, Chatham, N.J., assignor to GAF Corporation, New York, N.Y.

Continuation of Ser. No. 679,617, Nov. 1, 1967, abandoned. This application July 22, 1971, Ser. No. 165,319

Int. Cl. B44d *1/50;* **C08f** *3/00;* **H01j** *29/22*

U.S. Cl. 117—33.5 CM **5 Claims**

Process for the production of luminescent screens for color television tubes, the improvement comprising the use of light-insensitive ethylenically unsaturated vinyl compounds as the binder material, said compounds being capable of undergoing a hardening action when subjected to corpuscular radiation.

3,776,755

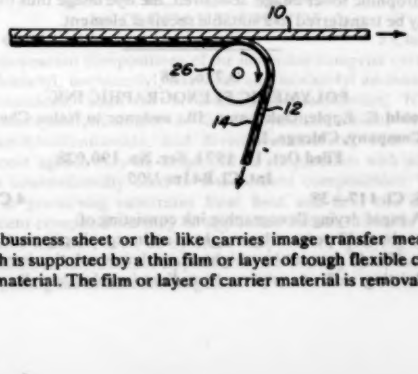
BUSINESS SHEET HAVING REMOVABLE TRANSFER MEANS AND METHOD OF MAKING

William T. Paulson, and David M. Davidson, both of Dayton, Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 800,167, Feb. 18, 1969, abandoned. This application June 25, 1971, Ser. No. 156,704

Int. Cl. B41m *5/10*

U.S. Cl. 117—36.4 **53 Claims**



A business sheet or the like carries image transfer means which is supported by a thin film or layer of tough flexible carrier material. The film or layer of carrier material is removably

attached to the sheet and may be removed from the sheet before or after use of the transfer material. Thus, when desired, the transfer material is removed from the business sheet by removal of the carrier material and the business sheet is thus freed from the transfer material and from any problems which may be associated therewith.

3,776,756

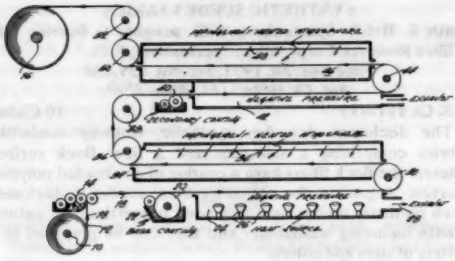
CORRECTION MATERIAL AND METHOD FOR THE MANUFACTURE THEREOF

Victor Barouh, 935 Plum Tree Rd., West, Westbury, and Robert Glenn, 70-20 108th St., Forest Hills, both of N.Y.

Filed Feb. 1, 1972, Ser. No. 222,538

Int. Cl. B41c *1/08;* **B23p** *7/00*

U.S. Cl. 117—36.4 **6 Claims**



A method for manufacturing a correction material which utilizes a release layer top coating having a solvent which penetrates a transfer layer base coat to insinuate itself between the base coat and a substrate to permit for better and clearer transfer of material.

3,776,757

ELECTROGRAPHIC FORMATION OF DYE IMAGES

Donald R. Eastman, Rochester, N.Y.; Jonas J. Chechak, Saint Petersburg Beach, Fla., and Stewart H. Merrill, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sept. 22, 1972, Ser. No. 291,486

Int. Cl. G03g *13/22, 13/10*

U.S. Cl. 117—37 LE **21 Claims**

The present invention relates to an electrographic method for the formation of water-soluble dye images. An electrostatic charge pattern is developed using a liquid developer having toner particles containing a polymeric material which is normally hydrophobic, but which is readily convertible to a hydrophilic form when contacted by an activating solution of appropriate pH. The toner particle image is formed on a hydrophobic surface and is contacted with the activating solution to convert the toner particle image to hydrophilic form. The hydrophilic toner particle image is then contacted with a water-soluble dye solution to preferentially deposit dye on the hydrophilic toner image. If desired, the dye image thus formed may be transferred to a suitable receiver element.

3,776,758

POLYMERIC FLEXOGRAPHIC INK

Donald G. Epple, Oak Lawn, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

Filed Oct. 18, 1971, Ser. No. 190,028

Int. Cl. B41m *1/00*

U.S. Cl. 117—38 **4 Claims**

A rapid drying flexographic ink consisting of:

a. about 40 percent by weight of an inorganic pigment;

b. 40 – 45 percent by weight of a polymer solution/emulsion consisting of a styrene/butadiene/acrolein/acrylic acid (SBAA) tetrapolymer (30 – 40 percent by weight solids) containing as a predispersant additive 5 – 15 percent by weight of a polyacrylate; and

c. the balance inert diluent selected from the group consisting of water and lower alkanols.

3,776,759

PRODUCTION OF NUCLEAR FUEL PARTICLES COATED WITH SILICON CARBIDE

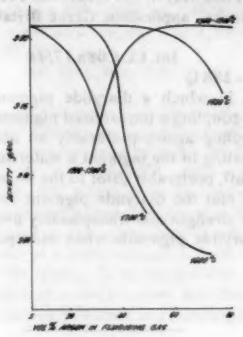
Lionel Houston Ford, St. Annes-on-sea, Lancashire; Roger William Davidge, Wantage, Berkshire, both of England, and Anthony Glyn Evans, Santa Monica, Calif., assignors to United Kingdom Atomic Energy Authority, London, England

Filed Dec. 22, 1971, Ser. No. 210,911

Claims priority, application Great Britain, Jan. 8, 1971, 1,119/71

Int. Cl. G21c *3/20*

U.S. Cl. 117—69 **6 Claims**



In the production of nuclear fuel particles carbon-coated nuclear fuel kernels are coated with silicon carbide. Deposition of the silicon carbide at a low rate increases the strength of the silicon carbide coating. It is necessary only for the outer layers to be deposited at the low rate. The temperature of deposition, the nature of the substrate and the composition of fluidising gas may be relevant factors.

3,776,760

METHOD FOR MANUFACTURING A TETRAFLUOROETHYLENE POLYMER-COATED ROLL

John R. Baker, Webster, and Edward G. Williams, Macedon, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Filed Oct. 6, 1971, Ser. No. 187,208

Int. Cl. B44d *1/14;* **B30b** *3/00*

U.S. Cl. 117—72 **3 Claims**

Tetrafluoroethylene resin-coated fuser rolls, in which the resin is applied in a single-fusion process, for use in xerographic reproducing apparatus. The single-fusion process involves successive application of tetrafluoroethylene coats 0.6 to 0.9 mil thick until a coating of about 6 mils is attained. Between each application, the rolls are heated to about 180° F. in order to flash off water and volatile materials. The coating is fused by a single baking step at the end of the process.

3,776,761

SUPPORT FOR AN IMAGE-RECEIVING MATERIAL FOR THE SILVER SALT DIFFUSION TRANSFER PROCESS

Kazunobu Kato, and Kinji Ohkubo, both of Saitama, Japan, assignors to Fuji Photo Film Co., Ltd., Minami, Ashigarashi, Kanagawa, Japan

Filed Apr. 21, 1972, Ser. No. 246,402
Claims priority, application Japan, Apr. 22, 1971, 46/26289
Int. Cl. C23c *9/00, 7/00, 5/00*
U.S. Cl. 117—76 P 8 Claims

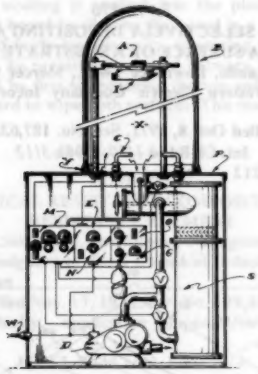
A support for an image-receiving material for the silver salt diffusion transfer process having on a paper base, in order, a polyolefin resin layer and a polyvinyl butyral layer containing a fluorescent brightening agent, is disclosed.

3,776,762

DRY LUBRICATION

John Bernath, Los Angeles, Calif., assignor to Du-Kote Corporation, Los Angeles, Calif.

Filed Oct. 18, 1971, Ser. No. 190,098
Int. Cl. B44d *1/18*; C08f *3/22*
U.S. Cl. 117—93.1 GD 8 Claims



Applying a dry, lubricous, protective coating of polymerous material on the surfaces of parts in a thickness of about 100A. and in added increments thereof by cleaning the surfaces of the parts by subjecting the parts to ionic glow discharge in a low vacuum atmosphere and then coating the cleaned surfaces of the parts with polymerous material by subjecting the parts to ionic bombardment in an ionized atmosphere of fluorcarbon gas at about 6×10^{-6} Torr.

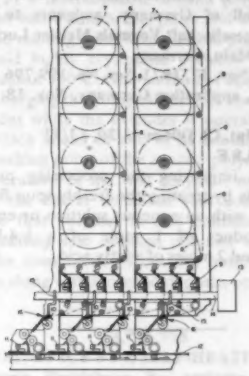
3,776,763

METHOD AND APPARATUS FOR APPLYING SMALL AMOUNTS OF LIQUID SUBSTANCE TO A WEB

Richard T. Ross, Aston, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Filed Jan. 27, 1972, Ser. No. 221,254
Int. Cl. B05b *13/02*
U.S. Cl. 117—105.3 7 Claims

A method and apparatus are disclosed for uniformly applying small amounts of liquid to a moving web of material. The method consists of dispersing controlled quantities of the liquid in a stream of air which is conveyed in controlled quantities to the zone of application and coalescing the liquid prior to applying it to the web. The apparatus consists of a mist generator to atomize the liquid in a stream of air, a conduit system to conduct the air stream containing the suspended droplets of the liquid to the application zone, a coalescer to convert the minute droplets of atomized liquid in the air stream to larger drops removed from their suspended state in the air stream, and an application zone where the coalesced liquid is brought into contact with the moving web of material. In the preferred use of the invention, perfume is applied to webs of tissue paper, and the method includes passing the stream of air after the perfume is precipitated from it through the tissue paper web to filter any remaining atomized perfume from the air.



3,776,764

METHOD FOR SEALING GLASS, METAL OR CERAMICS WITH MIXTURE OF PBO GLASS AND β-EUCRYPTITE CONTAINING GLASS

Kiyoshi Takagi; Susumu Kawamura, and Hiroshi Fujii, all of Otsu, Japan, assignors to Nippon Electric Glass Company, Limited, Tokyo, Japan

Filed Aug. 24, 1970, Ser. No. 47,580
Claims priority, application Japan, Aug. 25, 1969, 44/66488
Int. Cl. C03c *5/00, 7/02, 5/02*
U.S. Cl. 117—124 A 1 Claim

A sealing glass comprising a primary composition suitable as a solder, having a rapid rate of crystallization at a low temperature, a high melting point and a high coefficient of expansion, and a secondary glass composition having an extremely low coefficient of expansion crystallizing at a high temperature. The two compositions are mixed in predetermined ratio and placed under sealing heat conditions where they are caused to react to produce a third composition having a crystal which is higher in melting point and sealing resistance to reheating but which is lower in coefficient of expansion.

3,776,765

PROCESS FOR PROTECTING A SUBSTRATE WITH AN N^4-SUBSTITUTED AMINOARYLSULFONAMIDE INTUMESCENT AGENT

Shirley H. Roth, Highland Park, N.J., assignor to Cities Service Company, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,133
Int. Cl. C09d *5/18*; C09k *3/28*
U.S. Cl. 117—136 5 Claims

Intumescent compositions of the invention comprise certain N^4-thiazolyl, isothiazolyl, oxazolyl, and isoxazolyl aminoarylsulfonamides, such as N^4-2-thiazolylsulfanilamide, N^4-5-isothiazolylsulfanilamide, N^4-2-oxazolylsulfanilamide, N^4-5-isoxazolylsulfanilamide, and derivatives thereof. The intumescent agents may be employed in conjunction with additives conventionally used in intumescent compositions. For use in protecting substrates from heat and fire, the intumescent compositions may be applied to the substrates in any suitable manner, such as by electrodeposition, spraying onto an adhesive substrate, or application of a coating composition comprising the intumescent agent.

3,776,766

PROCESS FOR IMPROVING THE PROCESSING PROPERTIES OF POLYESTER FILAMENTS AND FIBRES

Otto Smerz, Kelkheim/Taunus; Werner Linke, Sulzbach/Taunus; Alfred Scharf, Frankfurt/Main, and Peter Hess, Kelkheim/Taunus, all of Germany, assignors to Farbwerke Hoechst Aktiengesellschaft Vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Nov. 17, 1971, Ser. No. 199,796

Claims priority, application Germany, Nov. 18, 1970, P 20 56 695.4

Int. Cl. D06m *13/20, 13/52*

U.S. Cl. 117—138.8 F 3 Claims

A process for improving the processing properties of polyester filaments by treating the freshly-spun filaments before being drawn with an aqueous solution or emulsion of a condensation product of 1 mole of a 1,4-butane-diol-polyglycol ether and 2 moles of a fatty acid.

3,776,767

PROCESS FOR IMPROVING THE CREASE RESISTANCE AND THE ABRASION RESISTANCE OF A TEXTILE MATERIAL

Arthur Buehler, Rheinfelden; Hans Ulrich Schuetz, Basel; Dieter Mæusezahl, Allschwil; Melvin Harris, Arlesheim, and Christian Guth, Basel, all of Switzerland, assignors to Ciba Limited, Basel, Switzerland

Continuation of Ser. No. 768,495, Oct. 17, 1968, abandoned. This application Jan. 5, 1971, Ser. No. 104,142

Claims priority, application Switzerland, Oct. 24, 1967, 14826/67

Int. Cl. D06m *13/00*

U.S. Cl. 117—139.4 6 Claims

This invention provides new condensation products which are obtained by reacting a monocyclic or dicyclic heterocyclic compound having 5 to 7 ring members, at least two members being nitrogen and at least two halogen atoms being linked directly with the carbon atoms of the hetero ring, with a thiourea compound, an alkali metal or ammonium hydrogensulfide and a mono- or dialkanolamine.

These condensation products are useful in combination with aminoplast precondensates for improving the crease resistance and the abrasion resistance of a textile material.

3,776,768

STRENGTHENED FIBRE FLEECES

Hans Weitzel, and Hellmut Striegler, both of Leverkusen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Filed Mar. 8, 1971, Ser. No. 122,145

Claims priority, application Germany, Mar. 14, 1970, P 20 12 287.6

Int. Cl. B32b *27/12*; C09d *3/80*

U.S. Cl. 117—140 A 3 Claims

The object of the invention is a strengthened fibre fleece from staple fibres containing as strengthening agent a copolymer based on acrylic and/or methacrylic acid esters and styrene. The copolymer contains additionally in copolymerised form a monomer having nonconjugated carbon double bonds, acrylic acid and methacrylic acid, and methacrylamido-N-methylolmethylether. In a process for producing the strengthened fibre fleece, the fibre fleece is impregnated with an aqueous dispersion of the copolymers and subsequently dried at temperatures between 60° and 130°C.

3,776,769

METALLISING PASTES

Raymond Herbert Buck, Newbury, and Harry Campbell Barlow, Basingstoke, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 2, 1971, Ser. No. 168,466

Claims priority, application Great Britain, Aug. 27, 1970, 41,275/70

Int. Cl. B44d *1/18*; C09d *5/24*

U.S. Cl. 117—212 6 Claims

A metallising paste for screen-printing microcircuitry comprises a heat-vaporizable inert liquid medium containing, in powder form, at least one constituent selected from a noble metal, a noble metal alloy, an oxide of a noble metal and an oxide of a noble metal alloy, at least one constituent selected from copper and copper oxide, and a vitreous binder, the binder having a fusion temperature less than the melting temperature of the noble metal - copper oxide alloy formed on fusing the powder constituents of the paste. The noble metal is usually Ag or Au and the noble metal alloy a Ag-Au alloy.

3,776,770

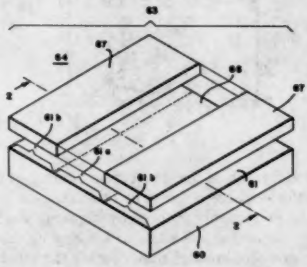
METHOD OF SELECTIVELY DEPOSITING A METAL ON A SURFACE OF A SUBSTRATE

David Jacob Lando, Lawrence Twsp., Mercer City, N.J., assignor to Western Electric Company Incorporated, New York, N.Y.

Filed Oct. 8, 1971, Ser. No. 187,633

Int. Cl. B44d *1/50*; H05k *3/12*

U.S. Cl. 117—212 10 Claims



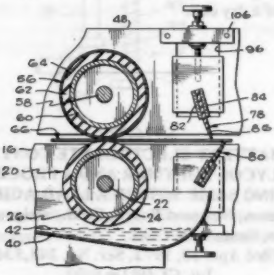
A method of selectively depositing a metal on a surface of a substrate is disclosed. The method comprises sensitizing the surface with a photosensitive sensitizing solution selected from the group of sensitizing solutions comprising (a) an aqueous solution comprising Sn^{+2} ions, Sn^{+4} ions and HF, (b) an aqueous solution comprising Pb^{+2} ions, Pb^{+4} ions and HF, (c) an aqueous solution comprising Ti^{+3} ions, Ti^{+4} ions, and HF and (d) an aqueous solution comprising Fe^{+3} ions and HF. The sensitized surface is then selectively exposed to a source of short wavelength ultraviolet radiation (less than 3,000A) to form a latent pattern capable of reducing an activating metal from an activating metal salt. The ultraviolet radiation pattern delineated or formed substrate is then treated with a solution comprising the activating metal salt, to deposit on the pattern the activating metal. The activating-deposited surface is then exposed to an electroless plating bath, which is catalyzed by the reduced activating metal, to produce an electroless metal-deposited pattern.

3,776,771

METHOD FOR ETCH RESIST COATING OF PLATED HOLES IN PRINTED CIRCUIT BOARDS

David Shepard, 2525 W. Washington Blvd., Los Angeles, Calif.

Filed Feb. 9, 1972, Ser. No. 224,805
Int. Cl. B44d 1/06
U.S. Cl. 117—212 6 Claims



Etch resist coating is applied into the plated holes in a printed circuit board by dipping the board in a liquid etch resist solution of fairly low viscosity, squeezing the etch resist into the holes by pressing the board between opposed press rolls, followed by first squeegeeing the top and then the bottom of the board to wipe both surfaces. This results in a resist-coated hole.

3,776,772

ELECTRICAL RESISTANCE COMPOSITION AND RESISTANCE ELEMENT

Eiichi Asada, Sakuradai, and Minoru Nakagome, Tokyo, both of Japan, assignors to Shoei Chemical Industries Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1971, Ser. No. 199,462
Claims priority, application Japan, Nov. 17, 1970, 45/101207
Int. Cl. B44d 1/02; B05c 7/14
U.S. Cl. 117—227 5 Claims

An electrical resistance composition has been provided using particles of ruthenium oxide which are coated with niobium and/or niobium oxide, and a glass frit.

3,776,773

TISSUE PAPER MOISTENING

John R. Taft, Duxbury, Mass.

Filed June 10, 1971, Ser. No. 151,846
Int. Cl. A61l 3/00; B05b 13/02; B08b 7/00
U.S. Cl. 134—6 10 Claims

A generally vertical planar member below a roll of toilet tissue paper defines a target area backing a sheet of tissue to be moistened. The vertical member carries a retractable arm which swings out to position a source of liquid for moistening having a nozzle opposite the center of the target area at a distance from the tissue comparable to the tissue width for spraying a sheet of tissue substantially uniformly to wet it without disintegrating it, typically with a mixture of propylene glycol and water.

3,776,774

PROCESS FOR INTERNAL CLEANING OF EXTRUDERS

Donald N. Miller, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed May 1, 1972, Ser. No. 248,958
Int. Cl. B08b 7/00, 9/00
U.S. Cl. 134—7 11 Claims

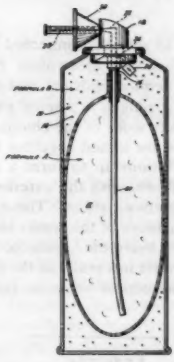
A process and an extruder cleaning composition for removing deposits of encrusted and decomposed material at elevated temperatures from the interior surfaces in contaminated zones of an extruder. The extruder cleaning composition comprises (1) discrete, crushable particles of a highly crystalline thermoplastic first polymer having a high brittle point and (2) a thermoplastic second polymer which has a melting point below said brittle point and which upon heating above its said melting point forms a fluid-phase carrier for said particles, said highly crystalline polymer having a melting point up to about 350°C. One method of operating the process comprises charging the composition into the inlet of the barrel of an extruder while the extruder is operated at barrel temperatures which ahead of and in its contaminated zones are above the melting point of the second polymer and below the brittle temperature of the first polymer, melting the second polymer in the barrel ahead of said contaminated zones, crushing the first polymer in said contaminated zones and thereafter melting said crushed polymer in the barrel, and removing the composition from the outlet of the barrel in melted form along with loosened deposits occluded therein.

3,776,775

REMOVAL OF ICE BY A SELF-HEATING MIXTURE

Stokes Lazarus, Harrisburg, Pa., assignor to Aeroseal Corporation, York Haven, Pa.

Continuation-in-part of Ser. No. 147,822, May 28, 1971, abandoned. This application Dec. 14, 1971, Ser. No. 207,855
Int. Cl. C09k 3/18
U.S. Cl. 134—42 15 Claims



Ice is removed from a windshield or the like by spraying onto that surface an at least partially reacted mixture in droplet form of two dissimilar chemical compositions which react chemically to generate heat. The two compositions are stored in separate compartments of a dispensing container, preferably of the aerosol type, and when the dispensing valve is opened the two compositions are mixed in predetermined proportions and expelled from the container. Means may be provided in the container to control the relative flow rates of the two compositions thereby to determine the proportions in which they are mixed. Means may be provided in the valve to retain the mixed compositions in the container for a period of time sufficient to provide for a desired degree of reaction between them.

3,776,776

GOLD-COATED PLATINUM-METAL BLACK CATALYTIC STRUCTURE AND METHOD OF PREPARATION

Henry G. Petrow, Cambridge, Mass., assignor to Prototech Company, Burlington, Mass.

Filed Jan. 21, 1972, Ser. No. 219,882
Int. Cl. H01m 27/04
U.S. Cl. 136—86 E 8 Claims

This disclosure is concerned with a novel gold-coated platinum-metal black catalytic structure, such as a fuel cell

electrode and the like, formed by growing colloidal gold oxide upon the black and reducing the same.

3,776,777

UNITARY ASSEMBLY OF SERIALLY CONNECTED FUEL CELLS

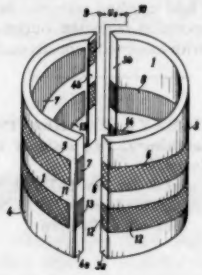
Bernd Houpert, and Andreas Reich, both of Heidelberg, Germany, assignors to Brown, Boveri & Cie AG, Mannheim, Germany

Filed May 19, 1972, Ser. No. 255,060

Claims priority, application Germany, May 21, 1971, P 21 25 208.4

Int. Cl. H01m *27/16*

U.S. Cl. 136—86 R **16 Claims**



A unitary assembly of serially connected fuel cells is provided comprising a fuel cell electrolyte of solid material formed in two mating semi-cylindrical bodies, with the electrodes of the fuel cells arranged in a spiral pattern in opposed relationships on opposite sides of the electrolyte bodies. The semi-cylindrical bodies are joined together at abutment surfaces in a gas-tight relationship to form a cylinder through which a gaseous fuel flows, with the exterior of the cylinder being exposed to a gaseous oxidant. The electrodes extend across the abutment surfaces of the semi-cylinders, and when the semi-cylinders are assembled, selected electrodes are placed in electrical contact internally of the fuel cell assembly to effectseries interconnection between the individual fuel cells of the assembly.

3,776,778

COLLECTIVE DRY CELL UNIT

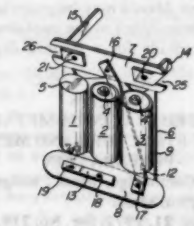
Kuninori Azuma, Ikoma, and Miyoji Nakai, Neyagawa, both of Japan, assignors to Matsushita Electric Industry Co., Ltd., Osaka, Japan

Filed Jan. 31, 1972, Ser. No. 222,022

Claims priority, application Japan, Feb. 3, 1971, 46/5408; Feb. 3, 1971, 46/5409

Int. Cl. H01m *5/00*

U.S. Cl. 136—132 **6 Claims**



A collective dry cell unit comprising a plurality of dry cells arranged in parallel positions, connecting leads for connecting the terminals of different polarities of adjacent cells, a plurality of take-out leads each having an end connected to the terminal of the dry cell positioned at the extreme right or left and the other end extended outward, a pair of fixing plates of insulating material and a housing for containing the dry cells; characterized in that each of the leads is fixed on the fixing plates and the pair of fixing plates is connected with each other by at least one of the leads, whereby the fixing plates are pressed inwardly thereby to maintain each lead in contact with the terminal of a dry cell.

3,776,779

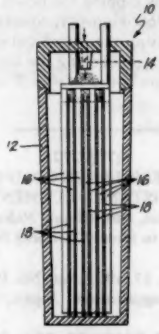
GELLED BATTERY ELECTROLYTE CONTAINING A POLYGLYCOL POLYMER AND A PROCESS FOR LOCATING SAME WITHIN A LEAD-ACID CELL

Bruce L. Johnson, Newport Beach, Calif., assignor to Elpower Corporation, Santa Ana, Calif.

Filed Apr. 28, 1972, Ser. No. 248,536

Int. Cl. H01m *9/00*

U.S. Cl. 136—157 **12 Claims**



A gelled battery electrolyte of a non-thixotropic character resistant to cracking and shrinking can be formed utilizing aqueous sulfuric acid, silica serving as a gelling agent for this acid and a polyglycol, preferably polyethylene glycol, as an additive-stablizer for the gel. The amounts of the silica and the polyglycol used will depend upon the physical and electrical properties desired in the battery. Preferably the electrolyte is formed by placing the polyglycol in an inlet to a battery so that it will be mixed with sulfuric acid and the silica as a dispersion of the two is directed into the battery so as to fill the battery. The polyglycol may, also, be located on battery parts prior to filling or a solution of the polyglycol can be injected into the electrolyte solution during filling.

3,776,780

MAGNETIC THERMOCOUPLE DEVICE

Jerome J. Kanter, 12300 Hobart Ave., Palos Park, Ill.

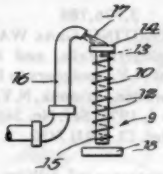
Continuation-in-part of Ser. No. 783,486, Dec. 13, 1968, abandoned. This application Jan. 17, 1972, Ser. No. 218,131

Int. Cl. H01v *1/14*

U.S. Cl. 136—228 **12 Claims**

A non-magnetic metal wire is wound around a dissimilar magnetic metal core member in magnetic inductive relation

and the dissimilar metals are connected at spaced junctions. A difference in temperatures between the junctions results in the



magnetization of the magnetic metal. When one junction of the device is heated, for example, the magnetic metal, for example a ferro-magnetic metal, provides a magnetic field.

3,776,781

THERMOCOUPLE WITH NICKEL-SILICON-MAGNESIUM ALLOY NEGATIVE ELEMENT

Carrol Dean Starr, Whippany, and Teh Po Wang, North Caldwell, both of N.J., assignors to Wilbur B. Driver Co., Newark, N.J.

Division of Ser. No. 173,671, Aug. 20, 1971. This application Apr. 12, 1973, Ser. No. 350,641
Int. Cl. H01v 1/22
U.S. Cl. 136—239 **5 Claims**

A nickel-base alloy, useful as a negative thermoelement, is disclosed. The alloy consists essentially of from about 3.25 to about 5.0 percent by weight of silicon and from about 0.03 to about 0.25 percent by weight of magnesium and the balance nickel. The new alloy is more oxidation resistant and has a greater EMF stability than existing type K negative thermoelements.

3,776,782

POLYESTER AND POLYAMIDE ADHESION IMPROVERS

Thomas J. Kiefer, Ambler, Pa., and Masamichi Nagatani, Tokyo, Japan, assignors to Amchem Products, Inc., Ambler, Pa.

Filed Mar. 15, 1971, Ser. No. 124,562
Int. Cl. C23f 7/08
U.S. Cl. 148—6.15 Z **11 Claims**

Prior to applying an alkyd paint to a metallic surface or to a pre-paint coating covering a metallic surface, there is applied to said surface or said coating a polyester or a polyamide for the purpose of improving the adhesion of said paint. The polyester or polyamide can be applied from an aqueous rinse solution or from a final rinse solution.

3,776,783

ALUMINUM COATING

Reddi Venkata S., Hollywood, Calif., assignor to Michael N. Marosi, Encino, Calif.

Filed Oct. 29, 1971, Ser. No. 194,031
Int. Cl. C23f 7/00
U.S. Cl. 148—6.27 **5 Claims**

This invention relates to an improved method of providing a color coating on the surface of aluminum products as a protection against corrosive action and for a decorative coating, the method comprising treating the aluminum products with a solution containing an aldehyde and an alkali.

3,776,784

METHOD OF PROCESSING STAINLESS STEEL STRIPS OR SHEETS

Wilson S. Rowe, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed July 14, 1972, Ser. No. 271,881
Int. Cl. C21d 9/46
U.S. Cl. 148—12 **2 Claims**

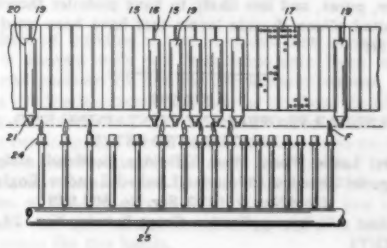
A process for producing stainless steel sheet and strip by hot rolling a stainless steel slab to conventional hot band gauge and then cold rolling the hot rolled steel without removing the mill scale formed during hot rolling and thereafter continuous annealing and pickling the cold rolled steel at an annealing temperature in excess of 1,700°F and at line speeds up to 50 percent faster than previously possible.

3,776,785

TUBE ANNEALING APPARATUS AND METHOD

Milton H. McCann, Wheeling, W. Va., assignor to Wheeling Stamping Company, Wheeling, W. Va.

Filed Dec. 21, 1971, Ser. No. 210,502
Int. Cl. C21d 1/08
U.S. Cl. 148—13 **5 Claims**



An apparatus and method for annealing thin-walled metal tubes which comprise a body portion and a tapered shoulder portion which has a relatively thickened wall. The tubes are disposed upon a transport conveyor which rapidly moves tubes through an annealing furnace wherein a first heat source is disposed for maintaining a uniform high temperature within the chamber, and wherein a second heat source comprising a plurality of combustion flame burners are disposed within the chamber along the path of travel of the conveyor. The flame emanating from the second combustible flame burners is directed upon the shoulder portion of the tubes which are passed through the annealing furnace. The tubes are rapidly brought to the annealing temperature without rupture or deformation of the thin-walled tubes.

3,776,786

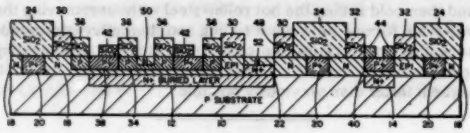
METHOD OF PRODUCING HIGH SPEED TRANSISTORS AND RESISTORS SIMULTANEOUSLY

James L. Dunkley, and Bruce E. Smith, both of Scottsdale, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Mar. 18, 1971, Ser. No. 125,648
Int. Cl. H01l 7/44
U.S. Cl. 148—175 **8 Claims**

When transistors and resistors are provided on a chip or a wafer to become the electrical components of a digital or linear circuit, the emitter and collector regions must be etched simultaneously utilizing conventional photoresist techniques. In accordance with the prior art, the silicon dioxide layer over the area where the collector-contact is to be provided is substantially thicker than the silicon dioxide layer over the area where the emitter is to be provided, whereby the total time of etch must be great enough to etch the thicker silicon dioxide layer over the collector contacts, whereby the thinner layer is overetched, resulting in undercutting of the silicon dioxide layer in an unpredictable manner. The resulting emitters are larger in area than desired, resulting in a transistor having an

emitter that is larger and therefore slower than is desired. A method of producing a transistor and a resistor on a chip is disclosed in which the thickness of the layers of silicon dioxide over the base and collector areas and over the resistor areas are more nearly equal prior to the emitter-collector photoresist operation, whereby overetching is greatly reduced when



the holes are etched through the silicon dioxide layers in the production of the emitter and collector contacts. Furthermore, the silicon dioxide layer is grown, rather than being chemically deposited, since the grown silicon dioxide layer is denser, purer, and less likely to have pinholes therein than deposited silicon dioxide layers that have been used in the prior art.

3,776,787

GRANULAR PROPELLANT CONTAINING KNO_3 AND UNSATURATED ESTER

Herbert Leslie Wood, West Kilbridge, Scotland, assignor to Imperial Chemical Industries, Limited, London, England

Filed Nov. 9, 1972, Ser. No. 304,948

Claims priority, application Great Britain, Nov. 23, 1971, 54,453/71

Int. Cl. C06b *19/02*

U.S. Cl. 149—7 **12 Claims**

A propellant of improved ballistic efficiency for small arms ammunition comprising potassium nitrate and, as surface moderant, a non-saturated ester having at least two ester groups and at least two —C=C— groups in its molecule.

3,776,788

METHOD OF PRODUCING INSULATED SEMICONDUCTOR REGIONS

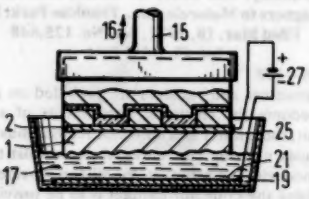
Heinz Henker, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Mar. 22, 1971, Ser. No. 126,724

Claims priority, application Germany, Mar. 20, 1970, P 20 13 546.0

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **4 Claims**



A process for producing insulated semiconductor regions. To produce an insulated region on a semiconductor wafer, a semiconductor substrate of one conductance type is etched to the region of opposite conductance type. The etching process stops at the pn-junction. The polycrystalline semiconductor layer is separated by the etchant through an insulating layer. The invention is particularly suitable for the production of multiple structures in a semiconductor wafer.

3,776,789

METHOD FOR PROTECTING GaAs WAFER SURFACES

Jagtar S. Basi, Wappingers Falls, and Edward M. Hull, Legrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1972, Ser. No. 248,874

Int. Cl. H01l *7/50*

U.S. Cl. 156—17 **5 Claims**

A process for the protecton of gallium arsenide surfaces comprises treating the surface with sodium oxychloride solution to form an interim protective film and subsequently removing the protective film utilizing sodium oxychloride and sodium carbonate prior to further processing.

3,776,790

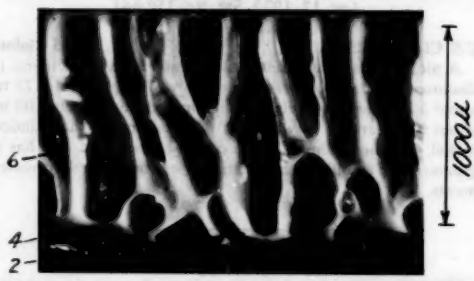
SUEDE-LIKE MATERIALS

Gene Norman Harrington, Monmouth, Maine, and Frank Peter Civardi, Wayne, N.J., assignors to Inmont Corporation, New York, N.Y.

Filed Dec. 4, 1970, Ser. No. 95,173

Int. Cl. B32b *5/20*

U.S. Cl. 156—79 **16 Claims**



A suede-like material is produced by expanding a thin layer of fused deaerated vinyl plastisol, containing a blowing agent, on a backing to form a layer of vertically elongated cells covered by a thin skin, which is then removed by abrasion.

3,776,791

PISTON VALVE

Ludovicus Hendrikus Baghuis, Vliedberg, Vlijmen, Netherlands, assignor to D. Stempel AG, Frankfurt am Main, Germany

Original application Nov. 17, 1969, Ser. No. 877,382, now Patent No. 3,599,672. Divided and this application Oct. 29, 1970, Ser. No. 85,250

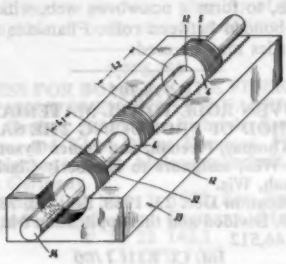
Claims priority, application Germany, Nov. 16, 1968, P 18 09 319.1

Int. Cl. F16k *11/07*

U.S. Cl. 156—91 **2 Claims**

A method for manufacturing a piston valve in a housing fitted with boreholes to add or withdraw a pressure fluid, and provided with a threaded bore therethrough into which at least two sleeves are threadedly received therein in spaced relationship to each other by means of an expanding mandrel, and cemented therein with a synthetic

resin adhesive, and then removing the expanding mandrel from the central bores of said sleeve members when the



synthetic resin adhesive has hardened and said sleeve members have become fixed in place.

3,776,792

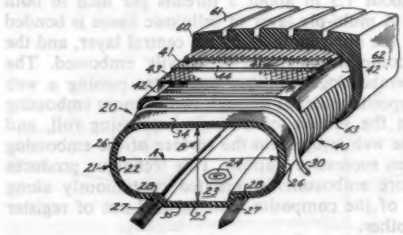
METHOD FOR FORMING BELTED OVAL PNEUMATIC TUBE-TIRES

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Original application June 23, 1969, Ser. No. 835,499. Divided and this application Feb. 25, 1971, Ser. No. 119,022

Int. Cl. B29h *5/01, 17/04*

U.S. Cl. 156—124 **24 Claims**



A pneumatic tube-tire is fabricated by applying inextensible reinforcing filaments on an oval toroidal tube member which has its major axis parallel to the axis of revolution of the resulting tube-tire carcass and providing the resulting reinforced tube-tire carcass with an inextensible circumferential belt (i.e. one that is circumferentially inextensible) about its outer periphery to maintain the tube-tire carcass in its oval configuration when the tube-tire is pressurized. The inextensible circumferential belt may be associated with rubber stock forming the tread of the tube-tire and can be formed separately or integrally with the tube-tire carcass. Preferably, the circumferential belt will contain inextensible reinforcing filaments which are oriented generally parallel to the mid-circumferential plane of the tube-tire and generally normal to the reinforcing filaments surrounding the tube-tire carcass. Spaced apart roll restraining hoops are placed within the reinforcing filaments surrounding the tube-tire carcass for lateral stability.

3,776,793

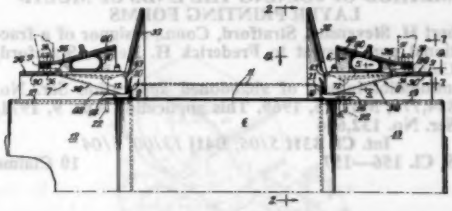
METHOD OF INCORPORATING TIRE BEADS INTO A TIRE

Larry C. Frazier, Sun City, Ariz., assignor to National-Standard Company, Niles, Mich.

Original application Feb. 19, 1970, Ser. No. 12,774, now Patent No. 3,645,827. Divided and this application Nov. 3, 1971, Ser. No. 195,147

Int. Cl. B29h *17/12, 17/22*

U.S. Cl. 156—132 **2 Claims**



Method of building a tire in which tire carcass material is formed with tire bead shoulders from which outer end portions of tire carcass material extend, supporting tire beads concentrically at the tire bead shoulders, freeing the support of the tire beads while maintaining the tire beads against the tire bead shoulders and partially encase the tire beads in the outer end portion of the tire carcass material, and then displacing the outer end portions of the tire carcass material over the tire beads and onto the tire carcass material at the tire beads to fully encase the tire beads.

3,776,794

REINFORCED FLEXIBLE HOSE AND METHOD OF MANUFACTURING SAME

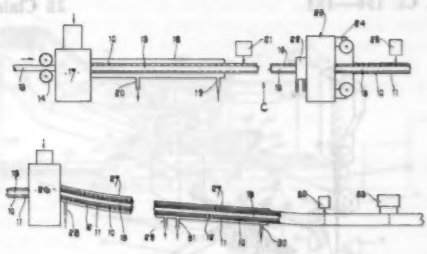
Kenneth Ingham, Stainsacre, England, assignor to Winster Hose Limited, Ilkeston, England

Filed Apr. 28, 1971, Ser. No. 138,261

Claims priority, application Great Britain, Apr. 28, 1970, 20,262/70

Int. Cl. B29h *7/14*

U.S. Cl. 156—143 **11 Claims**



Flexible reinforced hose is manufactured by extruding curable material onto a mandrel to form a tubular inner part of the hose, applying a wire reinforcement about the inner part, extruding a further layer of curable material about the reinforcement to form a tubular outer part. The assembly is then heated to cure the inner and outer parts simultaneously, with the assembly supported as a catenary during an initial part of the curing treatment

to avoid imparting a non-rectilinear set to the hose. The respective co-efficients of thermal expansion of the mandrel and of the reinforcement are such that mandrel expands radially relative to the reinforcement as the assembly is heated, with the result that material from the inner part is forced into interstices in the reinforcement and a closely embracing and surface keying relation is established between the reinforcement and the inner part of the hose.

3,776,795

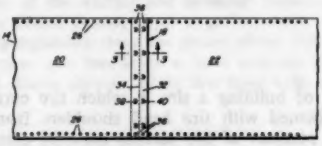
METHOD OF JOINING THE ENDS OF MULTI-LAYER PRINTING FORMS

Elbert H. Stevenson, Stratford, Conn., assignor of a fractional part interest to Frederick H. Rehm, Stamford, Conn.

Continuation-in-part of abandoned application Ser. No. 824,776, May 15, 1969. This application Apr. 9, 1971, Ser. No. 132,656

Int. Cl. B31f *5/06;* **B41j** *13/00, 5/04*

U.S. Cl. 156—157 **10 Claims**



This disclosure relates to a method and means for joining the ends of multi-layer printing forms so as to provide a continuous supply of printing media to high speed printing machines. The end of one strip of multilayer forms is positioned with the front edge of the next strip in aligned abutting relation. Then a strip of adhesive material is applied across an outer sheet or layer of each strip. Then one or both forms are partially perforated leaving a partially folded over tab which holds the under layers in aligned relation to the outer sheet.

3,776,796

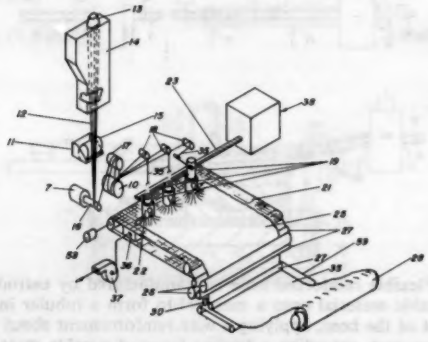
PROCESS AND APPARATUS FOR PRODUCTION OF A NONWOVEN WEB

Walter Peter Lipscomb and Garland L. Turner, Chesterfield, Va., assignors to Allied Chemical Corporation, New York, N.Y.

Filed Sept. 28, 1971, Ser. No. 184,542

Int. Cl. D04h *3/05*

U.S. Cl. 156—181 **28 Claims**



Method and apparatus for producing a nonwoven web. Continuous polymer filament is melt spun, treated with a substantially permanent anti-static agent, drawn uniformly about a slowly rotating draw pin, and splayed onto a conveyor by reciprocation of a series of air jet aspirators, each employing an aspirating medium which is introduced into each aspirator and flows through each aspirator in a direction substantially parallel with the aspirator axis, to form a nonwoven web, which is thereafter fusion-bonded between rolls. Filaments having different properties may be used.

3,776,797

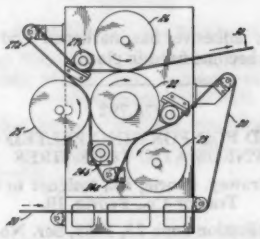
NONWOVEN ROLL TOWEL MATERIAL AND METHOD OF PRODUCING THE SAME

Gordon D. Thomas, Neenah, and James Tyson Gresham, Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Original application Dec. 23, 1968, Ser. No. 786,270, now abandoned. Divided and this application May 24, 1971, Ser. No. 146,512

Int. Cl. B31f *1/00*

U.S. Cl. 156—220 **8 Claims**



A nonwoven roll towel material including a central layer of an open mesh crossed thread fabric comprising resilient warp threads extending in the machine direction, and substantially non-resilient fill threads extending in the transverse direction. The thread count is in the range of from about 1.5 to about 5 threads per inch in both directions. A multi-ply layer of cellulosic tissue is bonded to each of the opposite faces of the central layer, and the resulting composite material is heavily embossed. The preferred embossing technique comprises passing a web of the composite material through two or more embossing stations on the surface of a single embossing roll, and drawing the web away from the surface of the embossing roll between successive stations. This technique produces two or more embossments repeated continuously along the length of the composite material and out of register with each other.

3,776,798

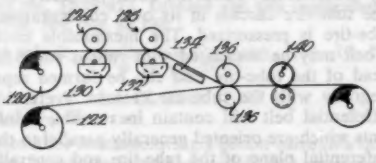
METHOD OF MAKING POUCHES

Gerard M. Milano, Glen Ellyn, Ill., assignor to Arvey Corporation

Continuation-in-part of abandoned application Ser. No. 69,670, Sept. 4, 1970. This application Jan. 31, 1972, Ser. No. 221,982

Int. Cl. B32b *7/14, 31/18*

U.S. Cl. 156—269 **9 Claims**



A method of simultaneously producing a plurality of plural walled members by applying localized areas of adhesive to a first continuous web of one material, feed-

ing a second continuous web of material in super-posed relation to the first web with the adhesive located between the webs, pressing the webs into engagement with each other to adhere the webs along at least some of localized areas of adhesive, severing the adhered webs along spaced lines to produce a plurality of plural walled members capable of being transformed into pouches.

3,776,799
PROCESS FOR BONDING THE FIBERS OF A NON-WOVEN TEXTILE FABRIC

Ehrenfried Gruber, Wiesbaden-Biebrich, Ludwig Klenk, Hallgarten, and Klaus-Dieter Hammer, Finthen, Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden-Biebrich, Germany

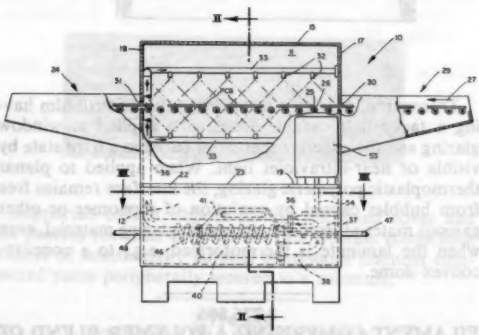
No Drawing. Filed May 2, 1972, Ser. No. 249,543
Claims priority, application Germany, May 5, 1971, P 21 22 142.1
Int. Cl. C09j *5/00*
U.S. Cl. 156—305 **3 Claims**

A bonded non-woven textile fabric is made by incorporating in the fabric an aqueous thermosensitive liquid containing an elastic polymer capable of binding the fibers of the fabric and the polymer is differentially coagulated throughout the thickness of the fabric by applying coagulating heat conditions to one surface and non-coagulating heat conditions to the other surface, the coagulating heat conditions being induced by a heat-carrying liquid, and uncoagulated polymer being then removed by washing out.

3,776,800
ETCHING APPARATUS

Daniel L. Goffredo, Riverton, N.J., and Conrad Dale Shakley, Spring Mills, Pa., assignors to Chemut Corporation, State College, Pa.

Filed Dec. 6, 1971, Ser. No. 205,202
Int. Cl. H05k *3/06*
U.S. Cl. 156—345 **8 Claims**

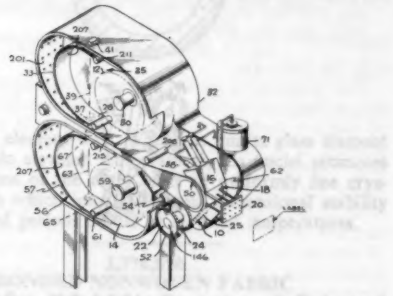


An etching apparatus is provided, in which articles, such as printed circuit boards and various other types of articles may be etched, within a chamber, during their movement through the chamber of the etching apparatus. Disposed beneath the chamber is a reservoir or sump for collecting etchant, or treatment fluid that is sprayed onto the articles as they are being conveyed through the chamber, with the sump or reservoir extending laterally of that portion of the apparatus directly beneath the chamber, for ease of top access to the reservoir, through a removable access opening therein, for ready access to a removable and replaceable filter disposed within the reservoir, near the inlet to an etchant pump also disposed therein. All of the etchant plumbing is contained within the apparatus, for internal collection of the etchant in the event of leakage or the like.

3,776,801
LABELING APPARATUS

Herbert La Mers, Los Angeles, Calif., assignor to R. A. Jones & Company, Inc.

Original application Aug. 30, 1968, Ser. No. 756,651, now Patent No. 3,661,625. Divided and this application Nov. 13, 1970, Ser. No. 89,492
Int. Cl. B32b *31/18*
U.S. Cl. 156—350 **19 Claims**

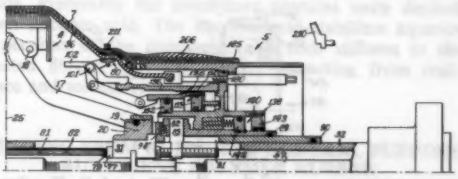


Apparatus for applying labels to goods comprising an elongated web with labels spaced therealong and supported within the web, and means for transporting said web to a first station where glue is applied to the labels and to another station where the labels are punched out of the web and pressed against the goods.

3,776,802
TIRE BUILDING APPARATUS

Edwin E. Mallory, Niles, Mich., and Emerson C. Bryant, South Bend, Ind., assignors to National-Standard Company, Niles, Mich.

Filed Aug. 23, 1971, Ser. No. 173,769
Int. Cl. B29h *17/12, 17/16*
U.S. Cl. 156—420 **18 Claims**



A tire building apparatus embodying an expandable and contractable intermediate drum, end drum assemblies at opposite ends of the intermediate drum for supporting tire carcass material and tire bead supporting and locking means at the inner ends of the end drums in an arrangement including carrier means and in which the tire bead supporting and locking means may be positioned with respect to the carrier means in equidistant axially spaced apart relation with respect to the transverse centerline of the intermediate drum, and concentrically of the longitudinal axis of the apparatus, and in which the tire bead

supporting and locking means in operative position lock tire beads inwardly of the ends of the tire carcass material.

3,776,803

JACKETED FIBROUS DUCT AND METHOD AND APPARATUS FOR APPLYING THE JACKET TO THE DUCT

Ronald E. Kissell, Columbus, Ohio, assignor to Owens-Corning Fiberglas Corporation

Original application Mar. 17, 1969, Ser. No. 807,761, now Patent No. 3,607,496. Divided and this application May 28, 1971, Ser. No. 147,905

Int. Cl. B29c *27/14*

U.S. Cl. 156—499 **9 Claims**

The disclosure embraces a rigid duct of bonded fibers sheathed or encased in a heat-shrunk jacket and involves a method of and apparatus for applying a tubular jacket of a suitable heat-shrinkable organic film onto the fibrous duct and applying heat to the end regions of the jacket and throughout the length of the jacket whereby the same is heat-shrunk or contracted to snugly engage and enclose the exterior surfaces of the fibrous duct.

3,776,804

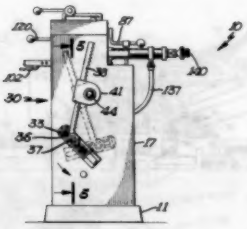
INTERMITTENT DRIVE MECHANISM

Thomas J. Monahan, Swansea, Mass., and Richard C. Adams, West Barrington, R.I., assignors to G. T. Schjeldahl Company, Northfield, Minn.

Continuation-in-part of abandoned application Ser. No. 81,369, Oct. 16, 1970. This application June 10, 1971, Ser. No. 151,842

Int. Cl. B30b *15/34*; B32b *31/00*

U.S. Cl. 156—515 **4 Claims**



Means for intermittently advancing a web of flexible film comprising drive means for imparting repeating cycles of intermittent motion and dwell to a web of flexible film with the web motion normally being in only the forward direction. The drive means includes an output shaft having first and second input driver means coupled to the output shaft, with the driver means being arranged in phased relationship, one to another, so as to achieve motion in the output shaft for more than 180° of motion in the input shaft. In one operational mode, the driver means are arranged in overlapped phased relationship, one to another, so as to achieve motion from each driver means for less than 180° of motion in the input shaft. In a second operational mode, the driver means are arranged in phased relationship, 180° from each other, so as to achieve motion in the output shaft of 360° during each operational cycle, this 360° of motion being followed by a dwell cycle of 180° of motion, prior to initiating the advance of the web on the next succeeding cycle. In the first operational mode, means are provided for intermittently inter-coupling the first driver means to the input and output shafts for initiating rotation of the output shaft, and for continuing the rotation for a predetermined period of less than one-half cycle of rotation of the input shaft. Thereafter, de-coupling of the first driver means occurs, along with substantially simultaneous inter-coupling occurring between the second driver means and the input and output shafts for the continued rotation of the output shaft for a second pre-determined period of less than one-half cycle of rotation of the input shaft, at which point, de-coupling the second driver means occurs.

3,776,805

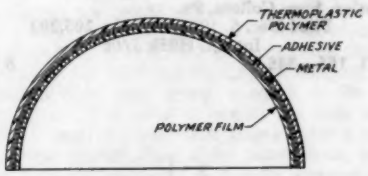
SOLAR CONTROL PRODUCTS

Richard L. Hansen, Fridley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sept. 7, 1971, Ser. No. 178,253

Int. Cl. B32b *15/08*; B44f *1/04*; G02b *5/08*

U.S. Cl. 161—2 **7 Claims**



Transparent-reflective metallized solar control film having a tacky light-curable adhesive is applied to window glazing and the adhesive thereafter cured to a hard state by visible or near-ultraviolet light. When applied to planar thermoplastic polymeric glazing, the interface remains free from bubbles caused by evolution of monomer or other gaseous material from the polymeric glazing material, even when the laminate is thermoformed, e.g., to a concavo-convex dome.

3,776,806

FILAMENT COMPRISING A POLYMER BLEND OF POLYESTER AND POLYAMIDE CONTAINING AN ORGANIC PHOSPHORUS COMPOUND

Richard E. Mayer, Amnon Birenzvige, and Gene C. Weedon, Richmond, Va., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Application Mar. 10, 1971, Ser. No. 123,008, now Patent No. 3,692,867, which is a continuation of abandoned application Ser. No. 752,789, Aug. 15, 1968. Divided and this application May 24, 1972, Ser. No. 256,227

Int. Cl. C08g *41/04*

U.S. Cl. 161—88 **4 Claims**

A process for increasing the whiteness of a filament extruded from a polymer blend comprised of polyester and polyamide which comprises incorporating in the polymer blend prior to extrusion thereof a small amount of an organic phosphorus compound which can be an organic

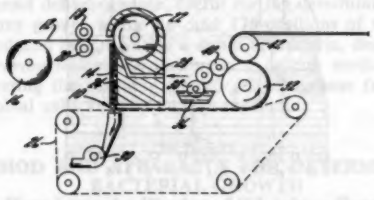
phosphite, phosphinate, phosphate, polymeric phosphite, polymeric phosphate, the corresponding acid, or mixtures thereof.

3,776,807

AIR FORMED ADHESIVE BONDED WEBS AND METHOD FOR FORMING SUCH WEBS

Charles E. Dunning and Winterton U. Day, Neenah, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed May 20, 1971, Ser. No. 145,458
Int. Cl. D04h *1/04*; D21h *5/26*
U.S. Cl. 161—124 4 Claims



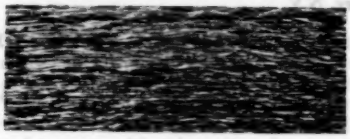
A method of forming a lightweight, airlaid web of wood fibers suitable for tissue and toweling applications comprises airlaying a wood fiber continuum onto a foraminous carrier, bringing the continuum into contact with a transfer member printed with an adhesive in a preselected pattern, the adhesive being disposed in a liquid, and removing the liquid to provide an airlaid, adhesively bonded web.

3,776,808

SUPPORTED RIBBONS

Robert Terry Montgomery, Matthews, N.C., assignor to Celanese Corporation, New York, N.Y.

Filed Sept. 30, 1971, Ser. No. 185,015
Int. Cl. B32b *5/08, 7/04*
U.S. Cl. 161—141 5 Claims



Supported bulked ribbons having improved cover and the process for their preparation, the ribbons comprising a sheet of substantially parallel continuous filament compacted yarns peripherally secured to a substrate.

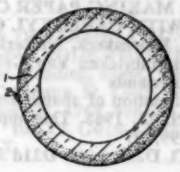
3,776,809

QUARTZ GLASS ELEMENTS

Peter Bäumler, Dornigheim, Gerhard Höfer, Bruchkobel, Tassilo Körner, Erlensee, Heinrich Mohn, Hailer, Karl Seiler, Hanau-Hohe Tanne, Fritz Simmat, Meerholz, and Karlheinz Rau, Hanau, Germany, assignors to Heraeus-Schott Quarzschmelze GmbH, Hanau, Germany

Continuation-in-part of abandoned applications Ser. No. 793,775, Jan. 24, 1969, and Ser. No. 810,713, Mar. 26, 1969. This application July 28, 1971, Ser. No. 166,844
Claims priority, application Germany, Feb. 22, 1968, P 16 96 061.5; Mar. 30, 1968, P 17 71 077.9, H 62,286
Int. Cl. B32b *7/02, 17/06*; C03c *3/06*
U.S. Cl. 161—164 10 Claims

Quartz glass element, such as a diffusion tube useful in the production of semiconductor elements, capable of forming an outer layer of uniformly fine crystalline silica such as cristobalite or tridymite when heated to a temperature at which crystalline silica forms containing crystallization promoting nuclei having a rate of diffusion in quartz glass less than that of sodium at elevated temperatures. Such nuclei are preferably present in the outer



half of the element wall. When the quartz glass element is exposed to elevated temperatures, the nuclei promotes the formation of the outer layer of uniformly fine crystalline silica which imparts thermal dimensional stability for extended periods of use at elevated temperatures.

3,776,810

BONDED NONWOVEN FABRIC

Louis E. Kelley, Philadelphia, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 36,499, May 11, 1970. This application Sept. 22, 1971, Ser. No. 182,877
Int. Cl. B32b *27/08*
U.S. Cl. 161—170 2 Claims

Fibers in nonwoven fibrous products are bonded together by a binder comprising the heat-cured product of a water insoluble copolymer of (i) an N-methylolamide which is N-methylolacrylamide or N-methylolmethacrylamide, and (ii) an acrylic acid ester of acrylic acid or methacrylic acid and a C_1 to C_8 alkanol, modified with (iii) a polyalkylene glycol of the formula

$$HO—(RO)_n—H$$

wherein R is an alkylene group of 2 to 6 carbon atoms and *n* is a number having an average value of 4 to 50. Preferred acrylic acid esters are ethyl acrylate and butyl acrylate, and the preferred polyalkylene glycol is a polyethylene glycol characterized by a molecular weight in the range of 300 to 2000. The copolymer may also contain units derived from unsaturated aliphatic carboxylic acids. Preferably the copolymer contains units derived from itaconic acid. The itaconic acid stabilizes aqueous dispersions of the copolymer and adds stiffness to the treated fibrous products without detracting from resilience and solvent resistance.

3,776,811

BONDING EPDM RUBBER TO GENERAL PURPOSE BUTADIENE POLYMER RUBBER

Charles F. Eckert, Wayne, and Norman J. Pinkowski, Bloomfield, N.J., assignors to Uniroyal, Inc., New York, N.Y.

No Drawing. Original application Apr. 27, 1970, Ser. No. 32,425. Divided and this application Sept. 9, 1971, Ser. No. 179,178
Int. Cl. B32b *25/08*; C08d *3/06*; C09j *5/00*
U.S. Cl. 161—253 6 Claims

A cement and technique for bonding stocks made from EPDM made with ethylidene norbornene or isopropylidene norbornene as the third monomer to conventional general purpose butadiene polymer rubber stocks are disclosed. The cement is made by dissolving compounded polybutadiene having a cis content not over 30%, a trans content of from 35% to 75%, a vinyl content of from

15% to 40%, and a combined trans and vinyl content of at least 70%, and an intrinsic viscosity greater than 2, in a volatile organic solvent. The surfaces of the two stocks to be joined are coated with this cement. The solvent is then caused to evaporate, the two surfaces are pressed together and the plied assembly of the two stocks is then cured under heat and pressure.

3,776,812

PROCESS FOR MAKING PAPER CONTAINING LATEX WITH CARBOXYL GROUP

Hendrik Jongetjes, Heemskerk, Netherlands, assignor to Koninklijke Papierfabrieken Van Gelder Zonen N.V., Amsterdam, Netherlands

No Drawing. Continuation of abandoned application Ser. No. 770,791, Oct. 25, 1968. This application Nov. 17, 1971, Ser. No. 199,797

Int. Cl. D21h *3/40*; D21d *3/00*

U.S. Cl. 162—168 **9 Claims**

The preparation of a fibrous bonding agent for non-woven materials in which a polymer latex containing 0.02–10 percent carboxyl groups is mixed with an aqueous solution of a cationic polymeric substance at a pH of 6–9. Within sixty minutes, the finely divided particles which are formed are converted into fine, fibrous particles by adjusting the pH of the mixture to 2–4 with stirring and taking care that the final solids content is 0.01–10 percent by weight. Also, the fiber so produced and the manufacture of non-woven materials using said fibrous binding agent.

3,776,813

METHOD TO DETERMINE THE NEUTRON ABSORPTION AND MULTIPLICATION PARAMETERS FOR CLUSTER-TYPE NUCLEAR FUEL ELEMENTS

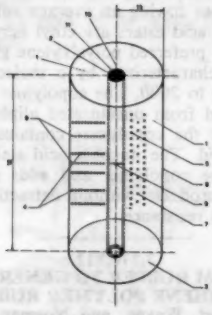
Silvio E. Corno, San Donato Milanese, Italy, assignor to Snam Progetti S.p.A. L.R.S.R-Brevetti, Milan, Italy

Filed June 26, 1969, Ser. No. 836,882

Claims priority, application Italy, July 4, 1968, 18,561/68

Int. Cl. G21c *17/00*

U.S. Cl. 176—19 R **8 Claims**



The neutron absorption and multiplication parameters are determined for heavy water (D_2O) or graphite moderated heterogeneous power reactors by irradiating a single fuel element cluster positioned along the longitudinal axis of a given column of moderator and taking neutron flux measurements at suitable radial and axial positions. The critical dimensions and power distribution for a heterogeneous core made up of a plurality of fuel element clusters of the type irradiated are derived from the neutron flux measurements by means of the so-called "source-sink" heterogeneous reactor theory.

3,776,814

HIGH TEMPERATURE NUCLEAR REACTORS

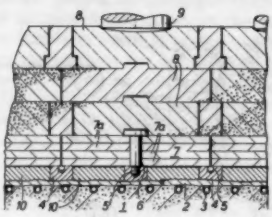
George Edward Lockett, Poole, and Samuel Brittan Hosegood, Wareham, England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Feb. 18, 1971, Ser. No. 116,448

Claims priority, application Great Britain, Mar. 2, 1970, 9,975/70

Int. Cl. G21c *13/08*

U.S. Cl. 176—87 **10 Claims**



The difficulties which arise, in conducting heat away from the thermal shield, which lies between a nuclear reactor core and the concrete pressure vessel which contains it, are acute, especially in respect of the underside of the core, and in cases where the direction of coolant flow is vertically downwards. According to the present invention this difficulty is overcome by using thermal conduction to lead away heat from the thermal shield to the concrete vessel in which the usual liquid coolant pipes are embedded. Special measures are taken to ensure a good conductive flow-path which are effective enough to obviate the need of special bleed coolant flows.

3,776,815

PROCESS FOR THE MANUFACTURE OF CEPHALOSPORIN C

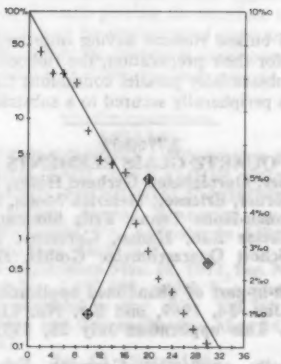
Hans-Joerg Treichler, Buus, and Jakob Nuesch, Riehen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Jan. 14, 1971, Ser. No. 106,420

Claims priority, application Switzerland, Jan. 21, 1970, 81,170/70

Int. Cl. C12d *9/22*

U.S. Cl. 195—36 R **4 Claims**

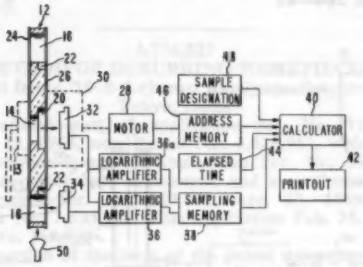


Process for the manufacture of Cephalosporin C by cultivating mutants of Emericellopsis-Cephalosporium in which the metabolism and/or biosynthesis of organic sulfur compounds is disturbed.

3,776,816
PROCESS FOR PRODUCING STEROID DEHYDROGENASE
Osamu Terada, Tokyo, Hitoshi Yagi, Matsudo-shi, Chibaken, and Shizuko Nakamura, Tokyo, Japan, assignors to Kyowa Hakko Kogyo Kabushiki Kaisha, Tokyo-to, Japan
No Drawing. Continuation-in-part of abandoned application Ser. No. 34,636, May 4, 1970. This application Aug. 21, 1972, Ser. No. 282,251
Claims priority, application Japan, May 6, 1969, 44/34,034
Int. Cl. C07c *167/00*; C12d *13/10*
U.S. Cl. 195—66 R 6 Claims

Steroid dehydrogenase, useful for the determination of hydroxy groups at the 3β- and 17β-positions of steroids, is produced by cultivating a strain of bacteria, designated as *Brevibacterium sterolicum*, in a culture medium and recovering the resulting steroid dehydrogenase from the microbial cells and the culture medium.

3,776,817
METHOD AND APPARATUS FOR DETERMINING BACTERIAL GROWTH
Hans J. von der Pfordten, 3463 Ashton Court, Palo Alto, Calif. 94306
Filed Oct. 4, 1971, Ser. No. 186,365
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R 21 Claims

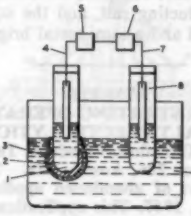


Apparatus and a method for use in determining the growth of bacteria in the presence of an inhibiting agent, such as an antibiotic. The apparatus includes a disk of transparent material mounted for rotation and having a number of outer peripheral cavities for receiving the bacteria in solutions containing the growth inhibiting agents of either the same or different types. The disk can possibly have a central cavity for receiving a mass of bacteria in a solution free of an inhibiting agent. A pair of photocells adjacent to the central cavity and a position to be occupied by one of the peripheral cavities sense the radiation scattered along paths extending 90° to the radiation passing into the the disk and the solutions from a radiation source near the outer periphery of the disk. The signals generated by the photocells at the beginning and end of a predetermined time interval are processed so that curves of the logarithm of the bacteria growth versus time can be obtained to permit the use of extrapolation techniques for determining zero growth of the bacteria.

3,776,818
COVER ELEMENT DISC DISPENSER
Waheed N. Khan, 1703 East-West Highway, 503, Silver Spring, Md. 20910
Filed June 19, 1970, Ser. No. 47,675
Int. Cl. C12k *1/10*
U.S. Cl. 195—139 14 Claims

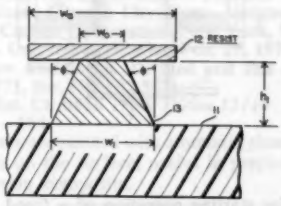
A disc dispenser for use in microbiological techniques such as antibiotic sensitivity testing is provided by adding to the conventional petri dish a cover element having means for holding paper discs in a predetermined pattern. The discs may be accurately deposited onto media contained in the dish by removing the lid and cover element, replacing the cover element of the invention, and inverting the assembly to allow the discs to fall into place. Discs are thereby positioned accurately without the need of an elaborate dispensing device.

3,776,819
UREA DETERMINATION AND ELECTRODE THEREFOR
David L. Williams, Reading, Mass., assignor to Monsanto Company, St. Louis, Mo.
Filed Dec. 22, 1969, Ser. No. 887,200
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T 13 Claims



The invention concerns a potentiometric method of determining the urea content of fluids by use of a cation sensitive electrode having a urease layer on its surface.

3,776,820
METHOD OF FORMING MINIATURE ELECTRICAL CONDUCTORS
E. Curtis Johnson, Mahtomedi, and Benjamin F. Hillis, Lindstrom, Minn., assignors to Buckbee-Mears Company, St. Paul, Minn.
Filed Sept. 15, 1972, Ser. No. 289,728
Int. Cl. C23b *5/48*
U.S. Cl. 204—15 3 Claims



A process for the manufacturing of miniature electrical conductors which comprises etching a base material to a predetermined shape followed by electroplating material onto the base material until the desired conductor configuration is obtained.

3,776,821
GOLD PLATING ELECTROLYTE
Kenneth D. Baker, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation
Filed May 12, 1972, Ser. No. 252,595
Int. Cl. C23b *5/28*, *5/42*
U.S. Cl. 204—43 G 4 Claims

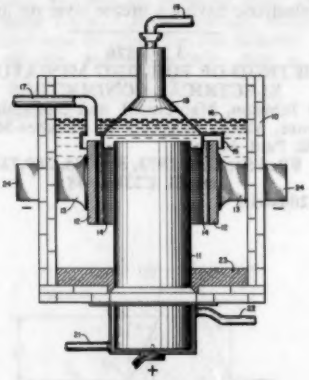
A gold plating electrolyte containing as its conducting and buffering compounds alkali metal or ammonium sul-

phamate and alkali metal or ammonium phosphate. The criticality of the ratio of 5:1 to 2.3:1 sulphamate to phosphate if maintained in the gold electrolyte between the prescribed limits will give gold deposits with excellent metal distribution. To maintain the prescribed ratio of the two radicals, the gold is replenished from ammonium gold cyanide, thereby maintaining pH and density and critical ratio of said electrolyte.

3,776,822
GOLD PLATING ELECTROLYTE
Kenneth D. Baker, Somerville, N.J., assignor to Engelhard Minerals & Chemicals Corporation
No Drawing. Filed Mar. 27, 1972, Ser. No. 238,615
Int. Cl. C23b *5/28*
U.S. Cl. 204—46 **5 Claims**

A gold plating electrolyte for providing gold deposits with controlled hardness below 130 Knoop, which contains gold as the sulfite complex, an alkali metal sulfite, a buffering and conducting salt, and the combination of a polycarboxylic acid and a semi-metal brightener.

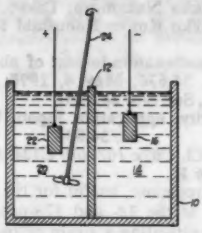
3,776,823
PROCESS FOR STARTING OPERATION OF A FUSED SALT ELECTROLYTIC CELL
Sam Crowther, Pasadena, Tex.
(Rte. 8, Box 286, Austin, Tex. 78703)
Continuation-in-part of abandoned application Ser. No. 658,131, Aug. 3, 1967. This application Oct. 21, 1971, Ser. No. 191,493
Int. Cl. B01k *1/00*; C22d *3/00, 3/06*
U.S. Cl. 204—60 **10 Claims**



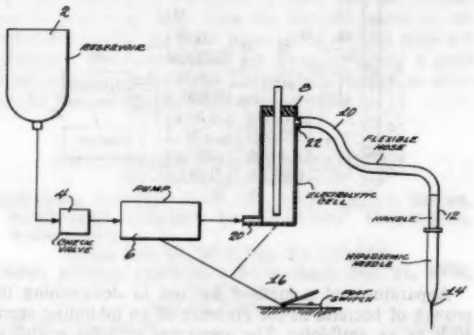
Process for starting operation of a fused salt electrolytic cell comprising filling a preheated cell with molten fused salt electrolyte and then applying operating current load to the cell to begin product recovery. There is no period of electrolysis prior to installation of product collection apparatus or means.

3,776,824
CATALYTIC OXIDATION OF NAPHTHALENE
Irwin B. Bernstein, Homewood, Ill., and Abraham Cooper, East Brunswick, N.J., assignors to The Sherwin-Williams Company, Cleveland, Ohio
Filed July 17, 1972, Ser. No. 272,521
Int. Cl. C07b *3/00*; C07c *49/66*
U.S. Cl. 204—78 **12 Claims**

Naphthalene is oxidized in a liquid phase reaction with aqueous sulfuric acid and a catalytic amount of β-form lead dioxide. The oxidation products are 2-naphthol and 1,4-naphthoquinone. The catalyst may be formed electrolytically or thermally, and the oxidation step can be carried out in an electrochemical cell.



3,776,825
ELECTROLYTIC TREATMENT
Jaroslav Vit, Belle Mead, N.J., assignor to National Patent Development Corporation, New York, N.Y.
Filed Oct. 26, 1972, Ser. No. 301,142
Claims priority, application Great Britain, Aug. 24, 1972, 39,591/72
Int. Cl. B01k *1/00*; A61k *5/02*
U.S. Cl. 204—81 **9 Claims**

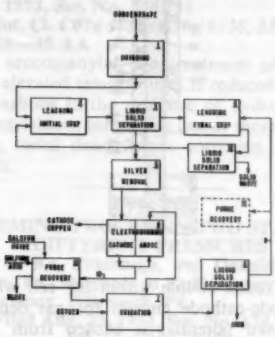


An aqueous solution is provided containing (1) an alkali metal or alkaline earth metal halide where the halogen has an atomic weight of 35 to 127 and (2) an amine containing a hydroxy group, a sulfonic acid group, an acetyl group or a carboxylic acid group and the solution is decomposed electrolytically to form the corresponding N-halo compound in situ.

3,776,826
ELECTROLYTIC RECOVERY OF METAL VALUES FROM ORE CONCENTRATES
Erdem Munir Atadan, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed July 19, 1972, Ser. No. 273,275
Int. Cl. C22b *15/08*; C22d *1/12, 1/16*
U.S. Cl. 204—107 **15 Claims**

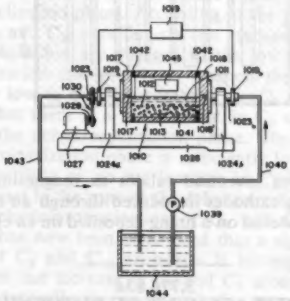
A hydrometallurgical process to recover metal values e.g., copper from sulfide ore concentrates, e.g. chalcopyrite, bornite, and chalcocite characterized by (1) a staged countercurrent leaching of the concentrate with an aqueous solution containing cupric chloride with an excess of chloride ion with the solids from the initial step of leaching directed to the final step and the liquid from the final step being directed to the initial step while maintaining at least 3.5 and preferably at least 5 gram

equivalents of chloride per kilogram of solution, (2) electrowinning a portion of the copper in the solution from the initial step from the catholyte compartment of



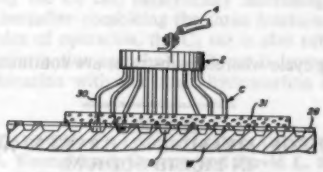
an electrolytic cell having separate catholyte and anolyte compartments, (3) oxidizing the stream from the electrowinning step, and (4) recycling the liquid from the oxidation.

3,776,827
METHOD OF DEBURRING WORKPIECES
Kiyoshi Inoue, 16–8 3-chome, Kamiyoga, Setagaya-ku, Tokyo, Japan
Continuation-in-part of application Ser. No. 714,252, Mar. 19, 1968, now Patent No. 3,620,953, which is a continuation-in-part of application Ser. No. 598,391, Dec. 1, 1966, now abandoned, and a continuation of application Ser. No. 859,532, Apr. 21, 1969, now Patent No. 3,533,928. This application Feb. 25, 1971, Ser. No. 118,725
The portion of the term of the patent subsequent to Oct. 13, 1987, has been disclaimed
Int. Cl. B23p *1/00;* **C23b** *5/78*
U.S. Cl. 204—129.46 **16 Claims**



Apparatus for the electrochemical deburring of metallic workpieces in which a drum or endless band forms a continuously displaceable surface for the workpieces which, together with carbon particles and/or other abrasive particles, are agitated in an electrolyte. The drum is rotated about its horizontal axis while a pair of disks form electrodes closing the drum. When the endless belt is used, it then passes into a vessel retaining the electrolyte and thereafter carrying the workpieces to a collecting trough while carbon particles are continuously added or removed from the system whose electrodes are connected in pairs to respective phases of the power supply.

3,776,828
METHOD OF EMBOSSING THE SURFACE OF A METAL WORKPIECE
Robert H. Ashworth, Penn Hills Township, Allegheny County, Pa., assignor to United States Steel Corporation
Original application Apr. 15, 1970, Ser. No. 28,901, now Patent No. 3,704,220. Divided and this application May 12, 1972, Ser. No. 252,869
Int. Cl. B23p *1/00*
U.S. Cl. 204—129.65 **8 Claims**



The embossed surface of a metal workpiece is repaired by utilizing an electrode having relatively closely spaced discharge areas adjacent its center and relatively widely spaced discharge areas at its outer portion. A dent is first repaired by filling it with a metal to the level of the surrounding surface or by bending the metal of the dent back into its original position. A suitable stencil is placed on the prepared surface to be repaired and a pad saturated with electrolytic fluid is placed on the stencil. The electrode and workpiece are connected to opposite poles of a D.C. power source and the free end of the electrode is pressed into the pad. During the repair embossing operation the electrode is occasionally lifted from the pad and then lowered into the pad in a slightly different position.

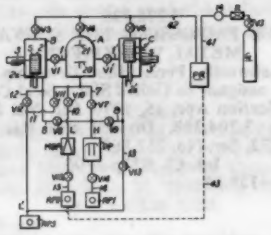
3,776,829
AMINATED CARBON FIBERS
John Cecil Goan, Johnson City, Tenn., assignor to Great Lakes Carbon Corporation, New York, N.Y.
No Drawing. Original application Feb. 27, 1970, Ser. No. 15,281, now abandoned. Divided and this application Oct. 26, 1971, Ser. No. 192,563
Int. Cl. B01k *1/00;* **D06m** *11/14*
U.S. Cl. 204—164 **1 Claim**

Carbon fibers are reacted with ammonia plasma to form amino groups on the surface, useful in preparing carbon fiber-epoxy resin composite.

3,776,830
PROCESS FOR PRODUCING SPUTTERED FILMS
Tsunehiko Endo, 1716 Yahara 2-chome, Nerima-ku, Tokyo, Japan
Filed July 9, 1971, Ser. No. 161,168
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **7 Claims**

A process for producing sputtered films and an apparatus for carrying out said process in which substrates are transferred between a sputtering chamber and one of at least two preliminary chambers both of which sputtering and one preliminary chambers are maintained under the same pressure and gas atmospheric conditions, said substrates are sputtered films thereon while they are disposed in the sputtering chamber and during the transfer and sputtering of said substrates the other of said preliminary chambers is charged with a new supply of substrates

to be sputtered films thereon and evacuated so that the last-mentioned preliminary chamber is ready for a subsequent



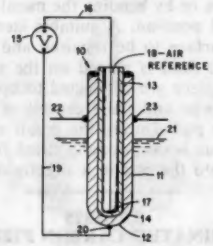
sputtering cycle whereby substrates are continuously sputtered.

3,776,831

DEVICE FOR MEASURING OXYGEN ACTIVITY IN LIQUID SODIUM

Prodyot Roy, Saratoga, and Robert S. Young, San Jose, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Nov. 15, 1972, Ser. No. 306,976
Int. Cl. G01n 27/46
U.S. Cl. 204—195 S 7 Claims



A composite ceramic electrolyte in a configuration (such as a closed end tube or a plate) suitable to separate liquid sodium from a reference electrode with a high impedance voltmeter connected to measure EMF between the sodium and the reference electrode as a measure of oxygen activity in the sodium. The composite electrolyte consists of zirconia-calcia with a bonded layer of thoria-yttria. The device is used with a gaseous reference electrode on the zirconia-calcia side and liquid sodium on the thoria-yttria side of the electrolyte.

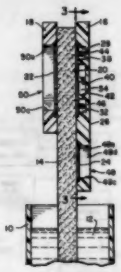
3,776,832

ELECTROCHEMICAL DETECTION CELL

Harry G. Oswin, Chauncey, and Keith F. Blurton, Ossining, N.Y., assignors to Energetics Science Inc., New York, N.Y.

Filed Nov. 10, 1970, Ser. No. 88,267
Int. Cl. G01n 27/46
U.S. Cl. 204—195 R 10 Claims

An electrochemical cell comprising an anode, a cathode and a reference electrode operating in an aqueous electrolyte is utilized for detection of noxious gases in air. The gas is oxidized at the anode and detection thereof occurs as a result of the current generated by the reaction. A fixed potential difference is maintained between the anode and the reference electrode to avoid generation of undesired current from reactions involving an



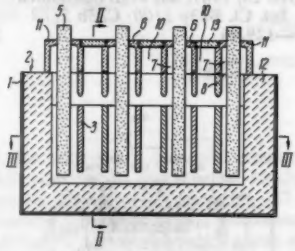
oxygen-water redox couple within the cell which would invalidate anode-cathode current for gas detection purposes. The fixed potential is chosen from within the range of about 0.9 to 1.5 volts.

3,776,833

MAGNESIUM ELECTROLYZER

Vladimir Pavlovich Sheka, ulitsa Khimikov 8, kv. 29; Valery Afanasievich Kolesnikov, ulitsa Sverdlova 57, kv. 44; and Valery Vyacheslavovich Kuzmin, ulitsa Pyatiletki 24, kv. 18, all of Berezniki, U.S.S.R.; Konstantin Dmitrievich Muzhzhavlev, ulitsa Zheleznovodakaya 48, kv. 30, Leningrad, U.S.S.R.; Petr Alexandrovich Donskikh, ulitsa Svobody 51, kv. 36; Berezniki, U.S.S.R.; Evgeny Georgievich Chistyakov, ulitsa Molodezhnaya 1, kv. 60, Kalush, U.S.S.R.; and Alexandr Ivanovich Rzyankin, ulitsa Karla Marxa 62, kv. 34, Berezniki, U.S.S.R.

Continuation of abandoned application Ser. No. 98,544, Dec. 16, 1970. This application June 5, 1972, Ser. No. 260,009
Int. Cl. C22d 3/02, 3/08
U.S. Cl. 204—243 R 1 Claim



The present invention relates to magnesium electrolyzers having cathodes introduced through an electrically insulating material on a lining deposited on an electrolyzer wall.

3,776,834

PARTIAL REPLACEMENT OF RUTHENIUM WITH TIN IN ELECTRODE COATINGS

Kevin J. O'Leary, 2590 Shaker Road, Cleveland Heights, Ohio 44118

No Drawing. Continuation-in-part of abandoned application Ser. No. 104,740, Jan. 7, 1971. This application May 30, 1972, Ser. No. 257,717
Int. Cl. B01k 3/06
U.S. Cl. 204—290 F 3 Claims

An electrode is disclosed which comprises an electrically conductive, particularly titanium, substrate at least partially covered with a solid solution-type coating consisting essentially of titanium, ruthenium and tin dioxides.

3,776,835

FOULING RATE REDUCTION IN HYDROCARBON STREAMS

Louis M. Dvoracek, Brea, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 62,718, Aug. 10, 1970. This application Feb. 23, 1972, Ser. No. 228,736

Int. Cl. C07c *3/30*; C10g *9/16, 23/00*

U.S. Cl. 208—48 AA 10 Claims

Fouling accompanying the treatment of hydrocarbon streams at elevated temperatures is reduced by contacting the hydrocarbons in the presence of hydrogen and antifouling compositions containing one or more of detergents, dispersants, metal deactivators, corrosion inhibitors and antioxidants.

3,776,836

REFORMING PROCESS IN TWO STAGES AT DIFFERENT PRESSURES

Daniel Y. C. Ko, Pittsburgh, and Donald L. Stahlfeld, Glenshaw, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 23, 1971, Ser. No. 174,005

Int. Cl. C10g *39/00*

U.S. Cl. 208—65 17 Claims

A C_5^+ naphtha containing C_8 through C_{10} and even C_{11} and C_{12} naphthenes and linear (non-ring structure) paraffins is reformed to improve its octane value by passage through one or a plurality of relatively high pressure acidic platinum catalyst naphthene aromatization reactors in series with one or more relatively lower pressure paraffin dehydrocyclization catalyst reactors. Most C_9 and C_{10} linear paraffins have an extremely low octane value (the octane number of normal decane is −53) and must generally be cracked to higher octane number fragments or to gases to achieve a gasoline product of satisfactory octane number. In the prior art this cracking generally occurred in the acidic platinum catalyst phase wherein the hydrogen pressure is high, protecting the catalyst from excessive coking. Cracking of the C_9 and C_{10} paraffins in the dehydrocyclization phase wherein the total pressure is lower in order to favor dehydrocyclization in addition to dehydrogenation would result in severe coking of catalyst. According to this invention C_9 and C_{10} linear paraffins are not hydrocracked but rather are dehydrocyclized. It has now been discovered that the dehydrocyclization phase must dehydrocyclize C_9 and C_{10} paraffins to C_9 and C_{10} aromatics if there is to be an increase in octane-barrel value in the dehydrocyclization phase. According to the present process, the C_9 and C_{10} paraffins are not cracked in the high pressure phase but are charged to the low pressure dehydrocyclization catalyst phase wherein the pressure is sufficiently low to dehydroaromatize the C_9 and C_{10} paraffins so that there is a net increase in C_9 and C_{10} aromatics in the dehydrocyclization phase. The pressure in the dehydrocyclization phase is sufficiently low that there is relatively little or no net increase in C_6 and C_7 aromatics at least in the zone of the dehydrocyclization phase wherein dehydroaromatization of C_9 and C_{10} paraffins occurs. It has now been discovered that a significant net increase of C_9 and C_{10} aromatics is incompatible with a significant net increase in C_6 and C_7 aromatics in the same dehydrocyclization zone, and vice versa. It has further been discovered that dehydrocyclization of C_9 and C_{10} linear paraffins is enhanced by the presence in the feed of C_9 and C_{10} aromatics containing multi-methyl or ethyl groups on the benzene ring together with a high ratio of hydrogen to hydrocarbon, even though both aromatics and hydrogen are products of the reaction. Therefore, a variation in the process accomplishes dehydrocyclization of C_6 and C_7 linear paraffins in an upstream zone of the dehydrocyclization phase and utilizes the hydrogen and aromatics therein produced with or without hydrogen and aromatics produced in the high pressure naphthene aromatization phase to enhance dehydroaromatization of C_9 and C_{10} paraffins which are separately added to a downstream zone in the dehydrocyclization phase.

3,776,837

MOTOR FUEL PRODUCTION PROCESS

Frits M. Dautzenberg and Henk J. Alkema, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Oct. 20, 1971, Ser. No. 191,088

Claims priority, application Netherlands, Nov. 19, 1970, 7016985

Int. Cl. C10g *31/14, 35/06*

U.S. Cl. 208—65 6 Claims

High aromatic content motor fuel is produced from C_5–C_8^+ naphtha by separating the naphtha into a C_5–C_6 cut, a separate C_7 cut and a C_8^+ cut; catalytically dehydrocyclizing the C_7 cut; catalytically reforming the C_8^+ cut; and thereafter combining the three fractions. In preferred modes of operation, the C_7 cut is also subjected to catalytic reformation and the C_5–C_6 cut is isomerized before combination with the other hydrocarbon fractions.

3,776,838

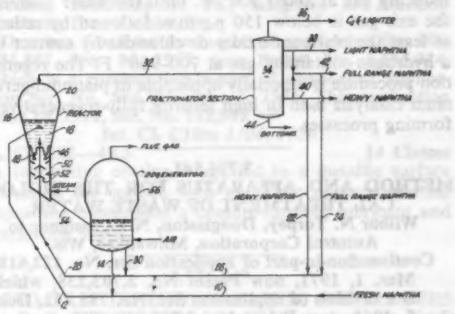
CATALYTIC CRACKING OF NAPHTHAS

Douglas J. Youngblood, Groves, and David L. Raynolds, Nederland, Tex., assignors to Texaco Inc., New York, N.Y.

Filed Oct. 2, 1970, Ser. No. 77,480

Int. Cl. C10g *37/02*

U.S. Cl. 208—74 9 Claims



Low octane naphtha and a recycle stream of full range naphtha or heavy naphtha are catalytically cracked with a zeolite cracking catalyst in separate elongated reaction zones yielding products which include C_4 and lighter hydrocarbons for alkylate feedstock, C_5 and lighter hydrocarbons for petrochemical manufacture and naphtha having an increased octane rating. Optionally, either or both of the feedstocks being cracked may be subjected to further cracking in a dense fluidized bed of the zeolite catalyst.

3,776,839

HYDROCRACKING PROCESS FOR LUBE OIL OVER Ni-Mo- AND Ni-W-on SiO_2-ZrO_2

Peter Ladeur, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Original application Nov. 4, 1971, Ser. No. 195,861, now abandoned. Divided and this application Feb. 21, 1973, Ser. No. 334,346

Claims priority, application Great Britain, Dec. 2, 1970, 57,250/70

Int. Cl. B01j *11/74*; C10g *13/06*

U.S. Cl. 208—110 5 Claims

Lubricating oil hydrocracking process utilizing catalysts comprising (a) one metal A consisting of nickel

and at least one metal B selected from the group consisting of molybdenum and tungsten present on a carrier in amounts of at least about 0.01 gram-atom of metal A and at least about 0.10 gram-atom of metal B per 100 grams of carrier; (b) an atomic ratio of metal A to metal B in the range of from about 0.10:1 to about 0.75:1, and (c) a carrier composed of silica and zirconia.

3,776,840

REGENERATION OF PLATINUM-GERMANIUM REFORMING CATALYST

Vincent J. Moravec, Jr., and William K. Meerbott, Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 16, 1971, Ser. No. 208,731
The portion of the term of the patent subsequent to Apr. 4, 1989, has been disclaimed
Int. Cl. B01j *11/02, 11/80;* **C10g** *35/06*
U.S. Cl. 208—139 **10 Claims**

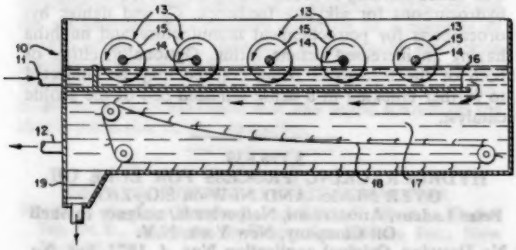
The activity and stability of a deactivated reforming catalyst containing a platinum group metal and germanium are restored to that of fresh catalyst by (1) removing substantially all carbon from the catalyst; (2) contacting the catalyst at about 900° F. with a non-reducing gas containing halogen, steam and oxygen until about 85% w. of the desired halide content is added; (3) discontinuing the use of stream and oxygen from the last-mentioned step until the halogenation is completed; and (4) drying and reducing the catalyst with a hydrogen-containing gas; then reusing the catalyst in a reforming process. Preferably, the catalyst is halogenated to a level about 20% greater than that of fresh catalyst. It is also preferred that the catalyst then be dried with a non-reducing gas at about 900° F. until the water content in the exit gas is below 150 p.p.m.v. followed by reducing at least the platinum oxides or chlorides by contact with a hydrogen-containing gas at 700–900° F. The regeneration procedure is especially applicable to platinum-germanium catalysts used in high severity fully-regenerative reforming processes.

3,776,841

METHOD AND APPARATUS FOR THE BIOLOGICAL TREATMENT OF WASTE WATER

Wilbur N. Torpey, Douglaston, N.Y., assignor to Autotrol Corporation, Milwaukee, Wis.

Continuation-in-part of application Ser. No. 122,618, Mar. 1, 1971, now Patent No. 3,703,238, which is a division of application Ser. No. 781,452, Dec. 5, 1968, now Patent No. 3,575,849. This application Nov. 15, 1972, Ser. No. 306,584
Int. Cl. C02c *1/04*
U.S. Cl. 210—17 **12 Claims**



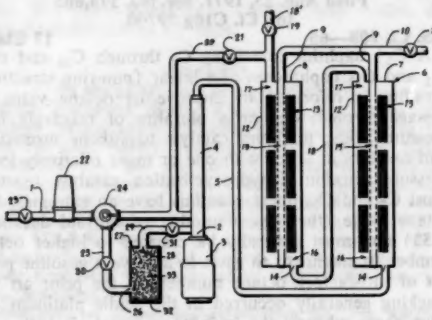
Method and apparatus for substantially upgrading the operating efficiency of waste water treatment plants is disclosed. The invention utilizes forcibly rotating bodies that are partially submerged in the waste water to provide surface area on which biological slimes develop and serve the purpose of removing pollutants from the waste water. The rotating, partially submerged bodies are located in the upper portion of the treatment tanks, to provide a biological treatment zone. A subjacent settling zone, physically separated from the biological treatment zone by a "false bottom" or longitudinal baffle is provided in the lower portion of the treatment tank. Waste water introduced in the tank is first biologically treated and then circulated through the subjacent settling zone to remove settleable solids.

3,776,842

WATER CLEANING TREATMENT

Henry L. Grimme, Jr., Parkville, Mo., assignor to Raypak, Inc., Westlake Village, Calif.

Filed Mar. 8, 1971, Ser. No. 121,935
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **1 Claim**



A treatment of water having alkaline earth metals and a pH above 7 wherein the pH of the feed water is controlled and reduced to desired limits by dividing the feed water flow and substituting hydrogen ions for some alkaline earth metal ions by contacting said one portion of the feed water with a cation exchange media. Returning the contacted feed water portion with the hydrogen ions to the other portion of the feed water stream to combine same and then passing said combined feed water under pressure over one side of cellulose acetate membranes and removing clean water from the opposite side of said membranes.

3,776,843

SOLID FIRE-EXTINGUISHING COMPOSITIONS

Arnold George Cottrell, Nevin Dorman Bradford, and Terence Oliver Lovett, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed June 14, 1971, Ser. No. 153,041
Claims priority, application Great Britain, June 25, 1970, 30,910/70
The portion of the term of the patent subsequent to Sept. 21, 1988, has been disclaimed
Int. Cl. A62d *1/00;* **C07c** *127/00*
U.S. Cl. 252—7 **11 Claims**

Improved yields of fire-extinguishing compounds having the empirical formula $MC_2N_2H_3O_3$ were M is an alkali metal are obtained by reacting urea with an alkali metal hydroxide, carbonate, bicarbonate or sesquicarbonate at a temperature of between 150° C. to 200° C. and in contact with an atmosphere containing at least 5% and up to 50% by volume of water vapor.

3,776,844

COMPOSITION AND METHOD FOR TREATING FIBROUS MATERIAL

James E. Nayfa, 1209 Levee St., Dallas, Tex. 75207

No Drawing. Continuation of abandoned application Ser. No. 727,021, May 6, 1968. This application Mar. 5, 1971, Ser. No. 121,566

Int. Cl. D06m *13/46, 13/34*

U.S. Cl. 252—8.75 3 Claims

A composition for treating seed cotton preparatory for ginning, as by way of a fog or mist during its passage from the cleaning operations, to prevent deterioration thereof during the ginning process and to preserve the staple and luster of the fibers, and thus improve the product as to marketability and spinning qualities in the textile industry where uniformity in fiber lengths is important. One constituent of the composition is a cationic surface active agent of the alkyl imidazoline class containing hydrocarbon substituents derived from animal and vegetable fats and converted to an ionic salt by reaction with alkyl sulfate, minimizing or eliminating static electricity and thereby reducing fire hazards and the tendency of the adherence of sticks and trash to the lint cotton. A second constituent is a lubricating constituent such as an amine halide.

3,776,845

DRY FILM LUBRICANT CONSISTING OF SYNTHETIC RESIN, FLUORINATED GRAPHITE, AND SOLID LUBRICANTS SUCH AS MOLYBDENUM DISULFIDE, GRAPHITE, AND POLYTETRAFLUOROETHYLENE

Nobuatsu Watanabe, Kyoto, Hideaki Kusuno, Nishinomiya, and Yutaka Ishida, Suita, Japan, assignors to Nippon Paint Co., Ltd., Osaka, and Nippon Carbon Co., Ltd., Tokyo, Japan

No Drawing. Filed May 11, 1970, Ser. No. 36,467

Claims priority, application Japan, May 16, 1969, 44/37,756

Int. Cl. C10m *7/14, 7/28, 7/06*

U.S. Cl. 252—12 4 Claims

A novel, coating composition for dry film lubricant which comprises a synthetic resin for paint containing dispersed therein a mixture of at least one conventional lubricating material having a particle size of up to 60 microns, such as molybdenum disulfide powder, graphite powder or polytetrafluoroethylene powder, and a fine fluorinated graphite powder having a particle size of up to 60 microns, the proportion of said synthetic resin to said mixture being 90:10 to 10:90, preferably 60:40 to 40:60, by weight and the proportion of the conventional lubricating material to the fluorinated graphite powder being 99.5:0.5 to 5:95, preferably 70:30 to 30:70, by weight. Said coating composition has an increased critical PV value and substantially the same friction coefficient as that of a conventional one. The dry film of the coating composition acts as a durable, solid lubricant.

3,776,846

ALUMINUM COMPLEX SOAP GREASE

Wayne W. Bailey, Gibsonia, and Paul R. McCarthy, Allison Park, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,239

Int. Cl. C10m *5/24, 5/22, 5/14*

U.S. Cl. 252—32.7 13 Claims

A grease composition for lubricating bearings operating at temperatures up to about 350° F. comprises a mineral lubricating oil base having an aniline point below about 230° F. and a grease-forming amount of an aluminum complex soap of benzoic acid and (1) a saturated fatty acid having from 20 to 22 carbon atoms per molecule or (2) a saturated fatty acid mixture which contains at least 50 percent by weight of C_{20} and/or C_{22} fatty acids. The molar ratio of benzoic acid to C_{20}–C_{22} fatty acids is about 1.25:1 to about 2:1, benzoic acid to C_{20}–C_{22} fatty acids, respectively. If a saturated C_{14} to C_{22} fatty acid mixture which contains about 50 to about 60 percent by weight of C_{20} and/or C_{22} fatty acids is used, the molar ratio of benzoic acid to saturated C_{14} to C_{22} fatty acid mixture is about 0.7:1 to about 1:1, benzoic acid to saturated fatty acid mixture, respectively, The grease composition of the invention is distinguished over grease compositions prepared from an aluminum complex soap of benzoic acid and hydroxystearic acid or fatty acid mixtures which predominate in C_{16} and C_{18} acids.

3,776,847

LUBRICATING OIL COMPOSITION

James W. Pearson, Weybridge, Gareth G. Price, West Byfleet, and Hugh B. Earps, Wirral, England, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Feb. 10, 1972, Ser. No. 225,283

Claims priority, application Great Britain, Feb. 16, 1971, 4,735/71

Int. Cl. C10m *1/40*

U.S. Cl. 252—33 5 Claims

A lubricating oil composition for the hot rolling of metals comprises (a) from about 50 to about 85% by weight of a natural fatty oil, (b) from about 0.1 to about 10% by weight of an alkaline earth metal salt of an oil-soluble sulfonic acid and (c) from about 5 to about 49.9% by weight of a mineral lubricating oil having a viscosity index of at least 50.

3,776,848

PROCESS AND COMPOSITION FOR COATING METALS

Wilbur S. Hall, Plymouth Meeting, and Lester Steinbrecher, Southampton, Pa., assignors to Amchem Products, Inc., Ambler, Pa.

No Drawing. Continuation-in-part of application Ser. No. 791,801, Jan. 16, 1969, now Patent No. 3,585,084, which is a continuation-in-part of abandoned application Ser. No. 554,336, June 1, 1966. This application June 14, 1971, Ser. No. 152,992

Int. Cl. C10m *1/06, 1/26*

U.S. Cl. 252—49.5 14 Claims

A lubricating coating is applied to a metallic surface by treating the surface with an acidic aqueous coating composition comprising a coating-forming lubricant and an oxidizing agent.

3,776,849

LIQUID ELECTROPHOTOGRAPHIC DEVELOPERS

Jacques C. T. Tellier, Conklin, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 875,515, Nov. 10, 1969. This application Nov. 12, 1971, Ser. No. 198,461

Int. Cl. G03g *9/04*

U.S. Cl. 252—62.1 8 Claims

A liquid toner composition comprising an electrically insulating carrier liquid, a pigment and a copolymer of maleic anhydride and a higher alkyl vinyl ether. The alkyl group of the alkyl vinyl ether contains from about 16 to about 22 carbon atoms.

3,776,850

DETERGENT FORMULATIONS

Tillmon H. Pearson and Gunner E. Nelson, Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

No Drawing. Continuation-in-part of abandoned application Ser. No. 106,926, Jan. 15, 1971. This application July 28, 1972, Ser. No. 276,177

Int. Cl. C11d *3/20*

U.S. Cl. 252—89 21 Claims

To obviate eutrophication of water, non-phosphorus detergent builders and sequestering agents are provided. These are either

(a) a water soluble polymer of a 1-oxyacylopropane-2,3-dicarboxylic acid,

(b) a water soluble salt of a poly-1-oxacyclopropane-2,3-dicarboxylic acid

or a mixture of (a) and (b). Conventional detergent actives may be used with these builders.

3,776,851

DETERGENTS CONTAINING TETRAHYDROXY-SUCCINIC ACID AND SALTS THEREOF

Bao-Ding Cheng, Highland Park, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,683

Int. Cl. C11d *1/04*

U.S. Cl. 252—89 **11 Claims**

A non-phosphate and non-NTA containing detergent composition comprising from about 30 to 95% by weight of a detergent, especially an anionic or nonionic detergent and from about 5 to 70% by weight of tetrahydroxysuccinic acid and salts thereof.

3,776,852

PICKLING SOLUTIONS

Horst Fluchter, Dusseldorf, and Christian Rossmann, Langenfeld, Germany, assignors to Henkel & Cie G.m.b.H., Dusseldorf-Holthausen, Germany

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,039

Claims priority, application Germany, Feb. 2, 1971, P 21 04 699.1

Int. Cl. C11d *7/48*

U.S. Cl. 252—143 **4 Claims**

The present invention provides an acid pickling solution containing a wetting agent, the solution also containing an anti-foaming agent consisting essentially of a mixture of octadecanediol-1,12 and a paraffin oil.

3,776,853

DRY-CLEANING COMPOSITION AND METHOD

Herbert F. Minter, Pittsburgh, and James D. B. Smith, Turtle Creek, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

No Drawing. Filed Aug. 19, 1971, Ser. No. 173,231

Int. Cl. C11d *7/52*

U.S. Cl. 252—171 **10 Claims**

Filter clogging in dry-cleaning machines is reduced and filter life is extended by using a dry-cleaning solvent containing a flocculant. A dry-cleaning composition is disclosed which comprises a dry-cleaning solvent, about 50 to 1000 p.p.m. flocculant, and about 0.1 to 2% detergent.

3,776,854

SULFUR OXIDE ACCEPTORS HAVING HIGH INITIAL ACTIVITY WITH GOOD CHEMICAL AND PHYSICAL STABILITY AND PROCESS FOR THEIR PREPARATION

Frits M. Dautzenberg, Herman W. Kouwenhoven, and Jaap E. Naber, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 58,461, July 27, 1970. This application Dec. 1, 1971, Ser. No. 203,843

Claims priority, application Netherlands, Dec. 2, 1970, 7017654

Int. Cl. B01d *53/16*; B29d *27/08*; C04b *35/18*

U.S. Cl. 252—190 **16 Claims**

Highly active copper-containing acceptors suitable for use in removing sulfur oxides from waste gases are prepared by impregnating an alumina-containing support which has been calcined at a temperature above 780° C., with a water soluble compound of aluminum, titanium and/or zirconium either prior to or simultaneously with impregnation of a copper compound.

3,776,855

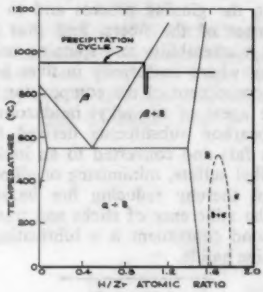
HYDRIDING PROCESS

Jan W. Raymond, Canoga Park, and Hideo Taketani, Northridge, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Sept. 14, 1965, Ser. No. 487,337

Int. Cl. C01b *6/00*

U.S. Cl. 252—301.1 R **10 Claims**



A method for hydriding a body of a Group IV–B metal, preferably zirconium, to produce a crack-free metal hydride body of high hydrogen content by cooling the body at the beta to beta+delta boundary, without further addition of hydrogen, to precipitate a fine-grained delta-phase metal hydride in the beta+delta phase region and then resuming the hydriding, preferably preceded by a reheating step.

ERRATUM

For Class 252—301 see:
Patent No. 3,776,508

3,776,856

PROCESS FOR THE WET CHEMICAL COMBUSTION OF ORGANIC MATERIAL

Knut Scheffler, Karlsruhe, and Hendricus M. Muller and Aldo Cappel, Hanau am Main, Germany, assignors to Alkem, Alpha-Chemie und- Metallurgie G.m.b.H., Leopoldshafen uber Karlsruhe, Germany

No Drawing. Filed Nov. 23, 1970, Ser. No. 92,196

Claims priority, application Germany, Nov. 21, 1969, P 19 58 464.6

Int. Cl. C01g *56/00*

U.S. Cl. 252—301.1 W **18 Claims**

The wet chemical combustion of organic materials, e.g. animal cadavers, cellulose, cellulose containing materials and other organic waste with subsequent separation and recovery of heavy metals, especially plutonium and uranium, contained therein by carbonizing the organic material with highly concentrated mineral acids at elevated temperature and combusting the colloidal carbon obtained with active oxygen to form carbon dioxide.

3,776,857

WATER-IN-OIL EMULSIONS

Paul Lindner, Evanston, Ill., assignor to Witco Chemical Company, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 839,667, July 7, 1969. This application Sept. 24, 1971, Ser. No. 183,646

Int. Cl. B01j *13/00*

U.S. Cl. 252—308 **9 Claims**

Stable (invert) water-in-oil emulsions are readily prepared comprising an oleaginous continuous phase, a dispersed water phase, and, as the emulsifier, fatty acid esters of ethylene oxide adducts of aliphatic polyhydric

alcohols, said alcohols containing from 3 to 12 carbon atoms and 3 to 6 hydroxyl groups and said adducts containing from about 0.3 to about 1.5 mols of ethylene oxide per hydroxyl group.

3,776,858

CATALYSTS

Bastiaan Adriaan Heide and Johannes Jacobus Muller, Rotterdam, and Theodorus Joannes Kock, Heenvliet, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

No Drawing. Filed Dec. 1, 1971, Ser. No. 203,844

Claims priority, application Great Britain, Dec. 4, 1970, 57,649/70

Int. Cl. B01j

U.S. Cl. 252—431 R **13 Claims**

The specification describes interesterification catalysts comprising particles of a catalytically active alkali metal derivative, e.g. sodium ethoxide, immobilized by a substantially completely saturated solid fatty material, e.g. hydrogenated fat, soap or fatty acid wax.

The catalyst can be used for the interesterification of glycerides.

3,776,859

AUTOMOTIVE EXHAUST CONVERSION CATALYST

Edgar Alan Simpson, Severna Park, Md., assignor to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed Feb. 28, 1972, Ser. No. 230,072

Int. Cl. B01f *11/06, 11/12*

U.S. Cl. 252—462 **5 Claims**

A process for improving the thermal stability of auto exhaust conversion catalyst prepared by deposition of a coating containing the catalyst components on a relatively inert base, in which the coating composition is stabilized in a manner such that the catalyst composite can withstand temperatures as high as 1800° to 2000° F. without loss of activity.

3,776,860

REFORMING CATALYST

Charanjit Rai, Somerset, N.J., assignor to Cities Service Oil Company, Tulsa, Okla.

No Drawing. Filed July 30, 1971, Ser. No. 167,760

Int. Cl. B01j *11/12*

U.S. Cl. 252—455 R **6 Claims**

An improved reforming catalyst is disclosed comprising an alumina support impregnated with platinum, rhenium and a rare earth metal. Preferably the catalyst composition comprises platinum, rhenium and rare earth metals such as neodymium (Nd), praseodymium (Pr), samarium (Sm) and ytterbium (Yb) each in amounts of from 0.1% to 5% weight.

3,776,861

DRY POWDER BUBBLEBATH COMPOSITION

Marvin Mausner, Teaneck, and Julian A. Rachels, Jr., Ridgewood, N.J., assignors to Witco Chemical Corporation, New York, N.Y.

No Drawing. Filed June 7, 1972, Ser. No. 260,580

Int. Cl. C11d *1/14, 1/22, 1/37, 3/04*

U.S. Cl. 252—545 **6 Claims**

Improved dry powder bubblebath compositions composed of separately prepared olefin sulfonate in flaked or powdered form blended with a spray dried bead composed of olefin sulfonate, linear alkyl benzene sulfonate, starch hydrolysate, magnesium sulfate and a sodium or potassium sulfate filler.

3,776,862

CYCLIC ETHER POLYMERIZATION PROCESS

John Boor, Jr., El Cerrito, Calif., assignor to Shell Oil Company, Houston, Tex.

No Drawing. Filed Nov. 4, 1971, Ser. No. 195,837

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **5 Claims**

Cyclic ethers are polymerized to polyethers, at a temperature between about 50° C. and about 160° C., in the presence of a catalyst comprising the reaction product of (1) an inorganic compound of a metal from Groups II, III*a*, IV, and VI*b*, of the periodic system having at least one bond from said metal to oxygen or sulfur, (2) a primary or secondary amine containing up to 18 carbon atoms and (3) a dialkyl zinc compound.

3,776,863

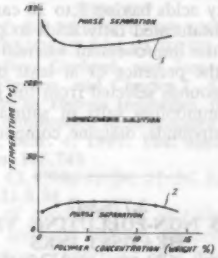
PROCESS FOR THE PRODUCTION OF PROPYLENE OXIDE POLYMERS

Kyoichiro Shibatani and Shiro Nagata, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki City, Japan

Filed May 15, 1972, Ser. No. 253,328

Int. Cl. C08g *23/14*

U.S. Cl. 260—2 A **10 Claims**



Solution polymerization of propylene oxide homopolymers and copolymers can be easily conducted in a polymerization system with low viscosity by strictly controlling the polymerization temperature at certain levels within the range of 0° C. and 150° C. and using an aliphatic hydrocarbon having four carbon atoms as a polymerization medium.

3,776,864

TRANSFER COATING FOR CARBON PAPER AND THE LIKE

Warren H. Woerner, Rochester, N.Y., assignor to Kee Lox Manufacturing Company, Rochester, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,750

Int. Cl. C09d *3/14, 3/16*

U.S. Cl. 260—17 R **6 Claims**

There are disclosed formulations for coatings for carbon papers comprising a plastic binder, ink, and a solvent. The plastic binder is composed of a methyl methacrylate polymer, a modifying resin, and a plasticizer. The methyl methacrylate comprises between 51% and 90% of the total resin content. The ink is composed of oils, coloring materials, a surface active agent, and a filler or extender. The modifying resin is compatible with the acrylic resin and the plasticizer but incompatible with the oils used in the ink.

3,776,865

WATER-REDUCIBLE ACID TERMINATED POLYMERIC FAT ACID POLYAMIDE RESINS USEFUL AS FLEXOGRAPHIC INK BINDERS

David W. Glaser and Roger A. Lovald, St. Paul, Minn., assignors to General Mills Chemicals, Inc.

No Drawing. Filed May 30, 1972, Ser. No. 258,023
Int. Cl. C08g 20/26
U.S. Cl. 260—18 N 8 Claims

An acid terminated polymeric fat acid polyamide resin obtained by reacting an acid component comprising a polymeric fat acid and another dicarboxylic acid with an amine component comprising isophorone diamine or mixtures thereof with an alkylene diamine. The resins are particularly useful in flexographic inks where water reducibility of the resins is desirable.

3,776,866

MALEINIZATION PROCESS

Yasuharu Nakayama, Hiratsuka, Japan, assignor to Kansai Paint Company Limited, Hyogo-ken, Japan

No Drawing. Original application Sept. 22, 1971, Ser. No. 182,912. Divided and this application Dec. 21, 1972, Ser. No. 317,273
Claims priority, application Japan, Sept. 24, 1970, 45/84,344; Sept. 28, 1970, 45/85,244
Int. Cl. C08f 27/00; C09f 7/00
U.S. Cl. 260—18 R 1 Claim

In maleinization process in which a maleic anhydride compound is reacted with at least one of unsaturated polymers having ethylenic double bond in the molecule, unsaturated fatty acids having 8 to 18 carbon atoms and esters of said unsaturated fatty acids to produce a maleinized product, the improvement wherein said reaction is carried out in the presence of at least one of nitrogen-containing compounds selected from the group consisting of ammonia, ammonium salts of saturated fatty acids, monoamine compounds, diamine compounds and amide compounds.

3,776,867

SOLVENTLESS NON-POLLUTING VEHICLES FOR HEAT-SET INKS

Harold W. Perry, Chicago, and Martin E. Swinford, Palatine, Ill., assignors to Richardson Ink Co., Niles, Ill.

No Drawing. Filed Oct. 5, 1970, Ser. No. 78,270
Int. Cl. C08g 51/72
U.S. Cl. 260—21 15 Claims

Vehicles for use in commercial heat-set inks comprising raw castor oil and hydroxylated fatty acids of castor oil which in the presence of modified resins, a cross-linking agent and an acid catalyst cure instantly when exposed to heat to form hard coatings on paper or paper-like substrates. The ink vehicles do not employ any hydrocarbon solvent additives requiring evaporation in the drying process, and therefore, no polluting vapors are present to contaminate normal atmospheric resources.

3,776,868

MODIFIED ESTER RESINS

Arthur L. Cunningham, Park Forest, and John Mathai, Chicago, Ill., assignors to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed May 1, 1972, Ser. No. 249,003
Int. Cl. C08f 19/14
U.S. Cl. 260—23 EP 27 Claims

This invention relates to resin compositions and to a process for preparing resin compositions which are particularly useful in organic mediums as coating or film-forming materials. The compositions comprise a modified ester obtained by reacting a fatty acid with an epoxidized-fatty acid ester and/or epoxidized-fatty oil to obtain a mixed ester which is modified with an aromatic vinyl monomer.

3,776,869

IMPROVED URETHANE ADHESIVES COMPRISING A BLEND OF A CASTOR OIL BASED ISOCYANATE PREPOLYMER WITH A TEREPENE PHENOLIC RESIN

Julius Sirota, South Plainfield, N.J., assignor to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 173,312, Aug. 19, 1971. This application Apr. 9, 1973, Ser. No. 349,036
Int. Cl. C08g 5/20
U.S. Cl. 260—24 1 Claim

Improved urethane adhesives having high green strength are disclosed comprising a blend of an isocyanate prepolymer derived from castor oil with a terpene phenolic resin.

3,776,870

PRODUCTION OF BENZOTHIETANE-2-SPIRO-2'-(1',3'-DIAZACYCLOALKANES)

Helmut Hagen, Frankenthal, and Friedrich Becke, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 2, 1971, Ser. No. 159,497
Claims priority, application Germany, July 15, 1970, P 20 34 987.5
Int. Cl. C07d 51/36
U.S. Cl. 260—25 R 10 Claims

Benzothietane-2-spiro-2'-(1',3' - diazacycloalkanes) by reaction of o-halobenzaldehyde compounds with diaminoalkanes and sulfur and the benzothietane-2-spiro-2'-(1',3'-diazacycloalkanes) themselves. The compounds which can be prepared by the process of the invention, such as benzothietane-2-spiro-2'-imidazolidine and its derivatives substituted in the 4'-position by methyl and/or the 4-position by chlorine or benzothietane-2-spiro-2'-hexahydropyrimidine and its derivative substituted in the 4-position by chlorine, are auxiliaries for the textile and rubber industries, plant protection agents and valuable starting materials for the production of plant protection agents and dyes.

3,776,871

COLD HARDENING POLYMERIZABLE COMPOSITION

Erich Bader, Hanau am Main, and Hubert Koert and Gerd Brod, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

No Drawing. Continuation-in-part of abandoned application Ser. No. 71,372, Sept. 11, 1970, which is a division of application Ser. No. 692,248, Dec. 20, 1967, now Patent No. 3,551,372, which in turn is a continuation of abandoned application Ser. No. 404,511, Oct. 16, 1964. This application June 6, 1972, Ser. No. 260,144
Claims priority, application Germany, Dec. 12, 1963, D 43,156
Int. Cl. C08f 19/00
U.S. Cl. 260—28.5 D 5 Claims

A polymerizable composition useful for coating, filling, sealing and waterproofing various substrates, which consists essentially,

(A) in an amount of about 50 to 95% by weight of said composition, of polymerizable monomer compounds and said monomer compounds in turn consisting,
  (i) to an extent of about 1 to 50% by weight of the total monomers, of at least one compound selected from the group consisting of n-hexyl acrylate, n-octyl acrylate, 2-ethylhexyl acrylate, decyl acrylate and the corresponding methacrylic acid esters,
  (ii) the remainder of said polymerizable monomer compounds being methylmethacrylate,
(B) in an amount of about 5 to 50% by weight of said composition, of polymeric compounds and said polymeric compounds in turn consisting of

(i) at least one interpolymer of vinyl chloride and at least one other monomer selected from the group consisting of vinyl acetate, maleic acid, maleic acid esters and maleic acid anhydride, said interpolymer of vinyl chloride being soluble in said monomer compounds at (A), and

(ii) any remainder of said polymeric compounds consisting of at least one polymer of said monomer compounds at (A) which is soluble in said latter monomer compounds, and

(C) of sufficient quantities of catalyst to effect the polymerization of said monomer compounds at (A) so as to cause the cold hardening of said composition.

3,776,872

PROCESS FOR THE PRODUCTION OF AQUEOUS DISPERSIONS OF MODIFIED SYNTHETIC CONJUGATED DIENE POLYMERS

Gerardus E. La Heij and Gerrit J. van Amerongen, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 882,743, Dec. 5, 1969. This application Mar. 16, 1972, Ser. No. 235,327

The portion of the term of the patent subsequent to Feb. 15, 1989, has been disclaimed

Int. Cl. C08d *5/02, 5/04*

U.S. Cl. 260—29.7 AT **8 Claims**

A process for the production of dispersions of synthetic conjugated diene solution polymers containing toluene insoluble gel comprises treatment of an aqueous polymer dispersion with a free radical yielding substance at a temperature above 20° C., in the absence of a compound that would form a redox system.

3,776,873

SPRAYABLE COMPOSITIONS

Leon V. Kremer, Cottage Grove Village, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed July 22, 1968, Ser. No. 746,245

Int. Cl. C08f *45/28, 45/30;* **C09k** *3/30*

U.S. Cl. 260—29.1 R **10 Claims**

Solutions of a polymeric base material and a volatile organic liquid at solid contents hitherto nonsprayable are rendered sprayable, either for aerosol or non-aerosol applications, by the inclusion of an organic compound, either a volatile liquid or a gas at room temperature and pressure, and a carbonated metal salt of an acid having at least 12 aliphatic carbon atoms and a metal ratio of at least 3. The polymeric base of such a composition is in the form of relatively small, discrete non-agglomerating particles capable of passing through the orifice nozzle of conventional aerosol or non-aerosol equipment.

3,776,874

ALKYL-SULFOXIDE AND ALKYL-SULFONE TERMINATED OLIGOMERS AS EMULSIFIERS IN EMULSION POLYMERIZATIONS

Leland E. Dannals, Waterbury, Conn., assignor to Uniroyal, Inc., New York, N.Y.

No Drawing. Division of application Ser. No. 777,175, Nov. 19, 1968, now Patent No. 3,668,230, and a continuation-in-part of applications Ser. No. 547,743, May 5, 1966, now abandoned, Ser. No. 562,097, July 1, 1966, now Patent No. 3,498,943, and Ser. No. 562,098, July 1, 1966, now Patent No. 3,498,492. This application Aug. 25, 1971, Ser. No. 174,950

Int. Cl. C08d *1/09;* **C08f** *1/13*

U.S. Cl. 260—29.6 TA **18 Claims**

Alkyl-sulfoxide and alkyl-sulfone terminated oligomers. Prepared by addition polymerization of monomer in presence of a mercaptan, followed by oxidation. Oligomers used as emulsifiers in the emulsion polymerization of one or more monomers to produce rubber or plastic latexes from which solid polymers can be obtained.

3,776,875

PREPARATION OF MODIFIED ORGANOPOLYSILOXANES IN A SOLVENT SYSTEM

John Charles Getson, Tecumseh, Mich., assignor to Stauffer Chemical Company, New York, N.Y.

Continuation of abandoned application Ser. No. 713,203, Mar. 14, 1968. This application Dec. 30, 1971, Ser. No. 214,405

Int. Cl. C08f *11/04*

U.S. Cl. 260—31.2 R **15 Claims**

Thixotropic curable compositions with self-priming properties are prepared by grafting hydroxyl-terminated organopolysiloxanes with unsaturated organic monomers in the presence of inert organic solvents.

3,776,876

SPREADABLE COVERING MATERIAL

Jens Juul Christensen, Bedford, Ohio, assignor of a fractional part interest to W. J. Ruscoe Company, Akron, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 6,555, Jan. 28, 1970. This application Feb. 15, 1972, Ser. No. 226,518

Int. Cl. C08d *7/08, 9/08*

U.S. Cl. 260—29.7 R **9 Claims**

A covering material comprising an air setting, spreadable homogeneous mixture made from normally incompatible organic solvent based elastomer cement, a water base neoprene latex, and a water base filler and/or pigment mixture.

3,776,877

METHOD OF PRODUCING EXTRUDED THERMOSET POLYURETHANES

Donald W. Kelley, Garland, and James F. White, Jr., Ronald B. Winslow, and Charles L. Coppock, Dallas, Tex., assignors to Thuron Industries, Inc., Dallas, Tex.

No Drawing. Continuation of abandoned application Ser. No. 804,258, Mar. 4, 1969. This application July 23, 1971, Ser. No. 165,743

Int. Cl. C08g *41/04, 51/36, 53/00*

U.S. Cl. 260—31.8 M **7 Claims**

The process of producing an extruded thermosetting resin having a urethane linkage comprising: forming a mixture in reactive proportions of a diisocyanate and a polymer having reactive hydroxyl groups, the mixture being capable of being extruded, reacting the diisocyanate and the polymer to form said urethane linkages, extruding said mixture while extrudable, and prior to the completion of the reaction, into a predetermined form and permitting the reaction to complete to produce a thermosetting resin.

3,776,878

ADDITIVE FOR ACRYLIC LACQUERS

Martin J. Simon, Natrona Heights, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

No Drawing. Filed Jan. 4, 1971, Ser. No. 103,917

Int. Cl. C08f *45/36*

U.S. Cl. 260—32.2 **9 Claims**

Acrylic lacquers containing acrylic polymers when used as coatings exhibit excellent gloss and pattern control when methyl 12-hydroxystearate is used as an additive. The additive may be used for both solvent solutions and dispersions of acrylic polymers.

3,776,879

HIGH SOLIDS METHYLATED UREA-FORMALDEHYDE COATING COMPOSITIONS

Werner Josef Blank, Wilton, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,321

Int. Cl. C08c *11/28, 11/32;* **C08f** *45/28*

U.S. Cl. 260—33.4 R **10 Claims**

There are provided high solids methylated urea-formaldehyde resin compositions comprising (1) at least 80%, by weight, of a blend of (a) liquid or syrupy methylated

urea-formaldehyde resins composed of urea, formaldehyde, and methanol in 1:2–3:1–2.5 molar ratio, respectively, and (b) a monofunctional branched-chain aliphatic alcohol wherein the alcohol is present in an amount equal to from 30% to 70% of the overall blend and (2) the balance, that is, not more than, 20%, by weight, if desired, being a suitable solvent for said blend. The composition, when applied as a coating to a metal or wood substrate and heated, will render the surface substantially free from pinholes, crawling, and cratering.

3,776,880

ARYLENE SULFIDE POLYMER COATING COMPOSITIONS

Jennings P. Blackwell, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed Sept. 1, 1971, Ser. No. 177,130
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 R **5 Claims**

Adherent coatings of arylene sulfide polymers are formed by applying to substrates a mixture of any arylene sulfide polymer and selected nitrogenous organic compounds. The arylene sulfide polymer-nitrogen-containing organic compound mixture is preferably applied as a slurry to a substrate in a carrier liquid, such as ethylene glycol, methyl alcohol, water, toluene, and the like or mixtures thereof, and thereafter heated to form a coating.

3,776,881

COATING COMPOSITION

Robert Wendell Lerner, Hossein Hayati, and John Robert Flasch, Adrian, Mich., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Dec. 30, 1971, Ser. No. 214,428
Int. Cl. C08g *51/04*
U.S. Cl. 260—37 SB **11 Claims**

A coating composition containing a hydrolyzed and condensed organotrihydrocarboxy silane, a boron compound selected from the class consisting of boric acid, boric acid anhydride, alkoxy boroxines and alkyl borates and a particulate solid. The coating composition will impart galvanic protection to metal surfaces coated therewith.

3,776,882

STABILITY OF FIBER-FORMING POLYESTERS

Franz Witzler, Oberbruch, and Hans-Martin Koepp, Erlenbach am Main, Germany, assignors to Glanzstoff AG, Wuppertal, Germany

No Drawing. Filed Apr. 14, 1971, Ser. No. 134,044
Claims priority, application Germany, Apr. 25, 1970, P 20 20 330.9
Int. Cl. C08g *51/60*
U.S. Cl. 260—45.9 R **4 Claims**

Stabilizing fiber- or film-forming polyesters, especially against heat and hydrolysis, by adding and melt-blending therewith a small amount of at least one arylene-biscarbodiimide as the essential stabilizing agent. The resulting stabilized polyester products are especially useful as filaments or fibers in tire cords.

3,776,883

FLAME RETARDANT POLYESTER COMPOSITIONS

Robert William Stackman, Morristown, N.J., assignor to Celanese Corporation, New York, N.Y.

No Drawing. Filed Apr. 3, 1972, Ser. No. 240,765
Int. Cl. C08g *51/62*
U.S. Cl. 260—45.75 B **1 Claim**

Flame retardant synthetic linear polyester compositions are provided which comprise from 1 to about 25 weight percent, based on the weight of the polyester composition, of an organo-arsenic compound which contains at least 5 weight percent of arsenic and has a boiling point of at least 20° C. higher than the melting point of the polyester. Suitable compounds for poly(ethylene terephthalate) include ethylenebis(diphenylarsine) and tetraphenylarsonium chloride.

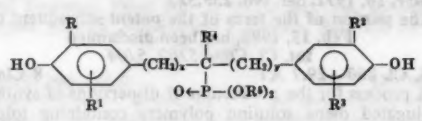
3,776,884

COMPOSITIONS STABILIZED WITH BIS-(HINDERED PHENOL)-ALKYLENE DIPHOSPHONATES AND PHOSPHONOACETATES

John D. Spivack, Spring Valley, N.Y., assignor to Ciba-Geigy Corporation

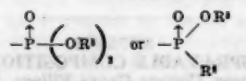
No Drawing. Original application May 19, 1969, Ser. No. 825,953, now Patent No. 3,714,300, dated Jan. 30, 1973. Divided and this application Apr. 12, 1971, Ser. No. 133,371
Int. Cl. C08f *45/58*; C08g *51/58*
U.S. Cl. 260—45.85 B **12 Claims**

Compositions of matter comprising organic materials normally subject to oxidative and thermal deterioration are stabilized by compounds having the structure

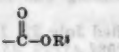


where

R, R^1, R^2 and R^3 are alkyl or cycloalkyl groups,
R^4 is a phosphoryl group having the structure



or carbalkoxy group



where R^6 is alkyl, phenyl or alkylphenyl, R^5 is alkyl, alkaryl or aralkyl and x and y are 1 to 6.

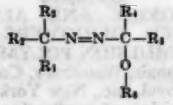
3,776,885

METHOD OF CURING POLYMERS WITH AZO COMPOUNDS

Ronald Edward MacLeay, Williamsville, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Oct. 28, 1971, Ser. No. 193,568
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 G **13 Claims**

Azo compounds of the formula



in which

R_1 is aliphatic hydrocarbon, cyano, aryl, aralkyl or R_6O—;
R_2, R_3 and R_4 are aliphatic hydrocarbon;
R_5 is aliphatic hydrocarbon, aryloxyalkyl, alkoxyalkyl, aryl alkoxycarbonylalkyl, acyloxyalkyl, hydroxyalkyl, aralkyl, acylalkyl, carboxyalkyl, cyanoalkyl, haloalkyl or t-alkylperoxyalkyl;
R_2 and R_3 and R_4 and R_5 can together form a bivalent aliphatic hydrocarbon radical; and
R_6 is aliphatic hydrocarbon, aryl or aralkyl;

are used to cross-link a methyl-vinyl base silicone rubber at a temperature in the range of from above 250° F. to 450° F. until cross-linking is effected.

3,776,886

POLYESTERS FROM 1,4-DIALKYL-1,4-CYCLOHEXANE-DICARBOXYLIC ACID AND ORGANIC DIOLS

Ralph C. Schreyer, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Nov. 4, 1971, Ser. No. 195,858, now Patent No. 3,725,343, which is a division of application Ser. No. 722,204, Apr. 18, 1968, now Patent No. 3,646,223. Divided and this application Dec. 20, 1972, Ser. No. 316,745

Int. Cl. C08g *17/08*

U.S. Cl. 260—47 C 4 Claims

Polyesters from 1,4-dialkyl-1,4-cyclohexane dicarboxylic acid and organic diols. Synthesis of the dicarboxylic acid from substituted butadiene and acrylic compound starting materials is disclosed. Advantages of a variety of polyesters are illustrated.

3,776,887

FLAME RETARDANT POLYESTER PRODUCTS PREPARED FROM HALO-SUBSTITUTED-ARYLOXY-ALKANOLS

Charles V. Juelke, Morristown, and Louis E. Trapasso, Westfield, N.J., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Filed Jan. 4, 1972, Ser. No. 215,412

Int. Cl. C08g *17/14, 17/18*

U.S. Cl. 260—47 C 5 Claims

Flame retardancy imparted to polyester products by incorporating therin a small but effective amount of a halo-substituted-aryloxy-alkane diol comonomer.

3,776,888

CARBOXY POLY(VINYL BENZAL)RESINS

John A. Mattor, Bar Mills, Maine, assignor to Scott Paper Company, Delaware County, Pa.

No Drawing. Continuation-in-part of application Ser. No. 180,104, Sept. 13, 1971. This application Dec. 26, 1972, Ser. No. 318,014

Int. Cl. C08f *27/18;* C08g *11/00*

U.S. Cl. 260—73 R 8 Claims

Disclosed are carboxy poly(vinyl benzal) resins useful as binders in combination with lithographic diazo compounds.

3,776,889

ALLYL CARBAMATE ESTERS OF HYDROXY-CONTAINING POLYMERS

Kailash C. Pande, Farmingdale, and Stanley E. Kallenbach, Roslyn Heights, N.Y., assignors to Powers Chemco, Inc., Glen Cove, N.Y.

No Drawing. Filed Jan. 7, 1971, Ser. No. 104,807

Int. Cl. C08f *27/10;* C08g *22/06, 22/10*

U.S. Cl. 260—77.5 CR 3 Claims

Light-sensitive film forming polymers are disclosed which comprise recurring units of allyl carbamate-esterified polymeric alcohols. The use of these photosensitive materials in photolithography and photomechanical processes is also described.

3,776,890

POLYAMIDES FROM 2-(4-AMINOCYCLOHEXYL)-1,1 - DIMETHYLETHYLAMINE OR 2-(4-AMINOPHENYL)-1,1-DIMETHYLETHYLAMINE

Lester Tsung-Cheng Lee, Parsippany, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed May 13, 1971, Ser. No. 143,186

Int. Cl. C08g *20/20*

U.S. Cl. 260—78 R 6 Claims

Novel polyamides are prepared by polymerizing a diamine selected from the group consisting of 2-(4-aminocyclohexyl)-1,1-dimethylethylamine and 2 - (4 - aminophenyl)-1,1-dimethylethylamine with a dicarboxylic acid or derivative thereof. The diamines are also novel compounds and are prepared by reduction of 2-(4-nitrophenyl)-1,1-dimethyl-1-nitroethane. The polyamides are useful in forming fibers and films having excellent high temperature properties.

3,776,891

1,1-DI(AMINOALKYLTHIO)-2,2-DICYANOETHYLENES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,968

Int. Cl. C07c *121/42;* C08d *9/00;* C08f *27/06*

U.S. Cl. 260—79.5 B 9 Claims

Compounds of the formula

$$(CN)_2C{=}C(S{-}A{-}NRR_1)_2$$

which are accelerators for the vulcanization of rubber.

3,776,892

ACRYLAMIDE POLYMER AND METHOD OF FLOCCULATING AN AQUEOUS SUSPENSION OF SOLID PARTICLES THEREWITH

Merrill Bleyle, Waltham, Mass., assignor to W. R. Grace & Co., Cambridge, Mass.

Filed July 2, 1971, Ser. No. 159,293

Int. Cl. C08f *15/40*

U.S. Cl. 260—80.73 4 Claims

Polymers containing a major amount of acrylamide copolymerized with an aliphatic carboxylic acid and an aminoester are useful for flocculating aqueous suspension of finely divided solid particles.

3,776,893

MULTIFUNCTIONAL INITIATORS

Floyd E. Naylor and Ralph C. Farrar, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Continuation-in-part of application Ser. No. 149,830, June 3, 1971, which is a division of application Ser. No. 800,271, Feb. 18, 1969, both now abandoned. This application Nov. 4, 1971, Ser. No. 195,811

Int. Cl. C08d *1/32;* C08f *1/28, 19/08*

U.S. Cl. 260—83.7 12 Claims

A polymerization process employing multifunctional initiators prepared by contacting organomonolithium compounds with selected compounds containing at least two carbon-carbon double bonds in the presence of polar compounds.

3,776,894

PROCESS FOR THE MANUFACTURE OF SUSPENSION POLYVINYL CHLORIDE OF POROUS STRUCTURE AND HIGH APPARENT DENSITY

Arno Czekay, Knapsack, Bruno Krämer, Hurth, and Karl Kaiser, Bruhl, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Mar. 8, 1971, Ser. No. 122,090

Claims priority, application Germany, Mar. 24, 1970, P 20 14 015.2

Int. Cl. C08f *3/22*

U.S. Cl. 260—92.8 W 2 Claims

Production of polyvinyl chloride of porous structure and high apparent density, vinyl chloride is polymerized in suspension with agitation, in a closed reactor, in aqueous phase, at a temperature of between 50 and 65° C., in contact with a monomer-soluble activator and a protective colloid. More particularly, agitation of the polymerization batch is interrupted 10 to 20 minutes after the start of the

polymerization, for a period of between 0.5 and 1.5 hours, and agitation is resumed after that period and the polymerization is completed.

3,776,895

PRODUCTION OF CYCLOALKENE POLYMERS HAVING IMPROVED PROCESSABILITY

Servaas van der Ven and Dirk Medema, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Sept. 14, 1970, Ser. No. 72,167

Claims priority, application Netherlands, Sept. 24, 1969, 6914466

Int. Cl. C08f 1/56

U.S. Cl. 260—93.1 5 Claims

Elastomeric cycloalkene polymers having improved processability are produced by polymerizing at least one cycloalkene having 5 or 7 to 12 ring carbon atoms with a catalyst system consisting of a combination of an aluminum hydrocarbyl compound and a compound of tungsten or molybdenum and in the presence of a small amount of an acyclic monoolefin.

3,776,896

ORGANOLITHIUM POLYMERIZATION INITIATORS

William J. Trepka and Richard J. Sonnenfeld, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Application Feb. 24, 1971, Ser. No. 118,575, now Patent No. 3,711,424, which is a continuation of abandoned application Ser. No. 772,865, Nov. 1, 1968. Divided and this application Aug. 7, 1972, Ser. No. 278,234

Int. Cl. C08d 1/20, 3/08, 3/12

U.S. Cl. 260—94.2 M 12 Claims

Improved 4 - halophenyllithium polymerization initiators are prepared by milling 4-halophenyllithium as a highly dispersed form in a hydrocarbon dispersing medium.

3,776,897

METHOD FOR TREATMENT OF SULFITE SPENT LIQUOR

Yoshikatsu Ikari, Chiba-ken, and Shoichiro Yokoyama, Tokyo, Japan, assignors to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Aug. 2, 1972, Ser. No. 277,472

Claims priority, application Japan, Aug. 6, 1971, 46/58,967

Int. Cl. C07g 1/00

U.S. Cl. 260—124 R 3 Claims

The pH of sulfite spent liquor to be treated is first adjusted to neutrality or weak acidity. To the resulting liquor is added a water-miscible organic solvent having a solubility parameter value of 9.0 to 12.5 in an amount such that the weight ratio of the solvent to water present in the spent liquor will fall in the range of from 6:4 to 4:6 thus causing hemicelluloses to be precipitated first. The hemicelluloses are removed from the liquor. Then, the organic solvent is added again to the residual liquor after the removal of hemicelluloses so as to cause formation of a heavy liquid phase containing lignosulfonates and a light liquid phase containing monosaccharides. The two phases thus formed are separated and refined to produce lignosulfonates and monosaccharides. The organic solvent used in the present treatment is recovered from the light liquid phase.

3,776,898

AZO DYESTUFFS CONTAINING AS THE TERMINAL COUPLING COMPONENT A PYRROLIDONOANILINE

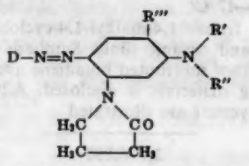
Lester N. Stanley, Delmar, and Russell E. Farris, Jr., Elnora, N.Y., assignors to GAF Corporation, New York, N.Y.

No Drawing. Filed Apr. 23, 1970, Ser. No. 31,379

Int. Cl. C09b 29/08, 29/36, 31/14

U.S. Cl. 260—156 12 Claims

Dye of the formula:



wherein D represents a diazotizable amine moiety free from carboxylic and sulfonic acid groups; R′ and R″ are selected from hydrogen, C_{1-18} alkyl and substituted alkyl, aralkyl, and cycloalkyl; R‴ is selected from hydrogen, lower alkyl and lower alkoxy, said dyes being suitable for dyeing hydrophobic fibers.

3,776,899

METHOD FOR THE PREPARATION OF O-SUBSTITUTED-6-AZACYTININES AND 6-AZACYTIDINE

Vladimir Panteleevich Chernetsky and Inna Vladimirovna Alexeeva, Kiev, U.S.S.R., assignors to Institute Mikrobiologii Im. Akad. Dk. Zabolotnogo, Kiev, U.S.S.R.

No Drawing. Continuation-in-part of applications Ser. No. 365,183, May 5, 1964, and Ser. No. 688,654, Dec. 7, 1967, which is a continuation-in-part of application Ser. No. 367,866, May 13, 1964, all now abandoned, and Ser. No. 731,698, May 24, 1968, now Patent No. 3,522,237. This application July 24, 1970, Ser. No. 58,161

The portion of the term of the patent subsequent to July 28, 1987, has been disclaimed

Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R 12 Claims

A method in which solutions of 2′,3′-O-alkylidene-5′-O-acyl-4-thio-6-azauridines or 2′,3′-O-alkylidene-4-thio-6-azauridines in organic solvents are treated with ammonia at atmospheric pressure to convert the substituted azauridines to 2′,3′-O-alkylidene-5-O-acyl-6-azacytidines or 2′,3′-O-alkylidene-6-azacytidines which may then be converted, if desired, to free 6-azacytidine by dissolving the above substituted-6-azacytidine in an anhydrous solvent and treating same with a metal alcoholate at an alkaline pH.

3,776,900

STABILIZATION OF REDUCED COENZYMES

Frank E. Hammer, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Apr. 26, 1971, Ser. No. 137,687

Int. Cl. C07d 51/52

U.S. Cl. 260—211.5 R 12 Claims

Stabilization of reduced coenzymes such as reduced diphosphopyridine nucleotide and reduced triphosphopyridine nucleotide is achieved by dissolving the reduced coenzyme in a solvent mixture consisting of a water-soluble alkanol and a water-soluble polyhydroxy alcohol.

3,776,901

REACTION OF KETOXIMES WITH CARBOXYLIC ACID AMIDE-SULFUR TRIOXIDE COMPLEXES

Kenneth K. Kelly, Franklin Township, Westmoreland County, and Joseph S. Matthews, O'Hara Township, Allegheny County, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

No Drawing. Filed Apr. 1, 1968, Ser. No. 717,967
Int. Cl. C07d *41/06*
U.S. Cl. 260—239.3 A 17 Claims

A method for converting a ketoxime to an N-substituted amide by reacting a ketoxime with a complex of an N-substituted carboxylic acid amide and sulfur trioxide to form a novel compound of the ketoxime, carboxylic acid amide and sulfur trioxide and decomposing this compound to produce an N-substituted amide corresponding to the ketoxime. Cyclohexanone oxime is converted to caprolactam.

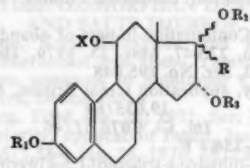
3,776,902

NOVEL $\Delta^{1,3,5(10)}$-ESTRATRIENES

Jean-Claude Gasc, Bondy, and Andre Pierdet, Noisy-le-Sec. France, assignors to Roussel-UCLAF, Paris, France

No Drawing. Filed Sept. 1, 1972, Ser. No. 285,885
Claims priority, application France, Sept. 10, 1971, 7132703
Int. Cl. C07c *169/08, 173/00*
U.S. Cl. 260—239.55 R 7 Claims

Novel 11β - alkoxy - $\Delta^{1,3,5(10)}$ - estratrienes of the formula



(I)

wherein X is selected from the group consisting of methyl and ethyl, R_1 is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms, R is selected from the group consisting of hydrogen and unsaturated hydrocarbon of 2 to 4 carbon atoms, R_2 is selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms when R is hydrogen and R_2 is with R_3, when OR_2 and OR_3 have the same spatial configuration, an alkylidene or aralkylidene in the form of

wherein A is selected from the group consisting of hydrogen and hydrocarbon and B is a hydrocarbon and R_3 may also be selected from the group consisting of hydrogen and acyl of an organic carboxylic acid of 1 to 18 carbon atoms and the wavy lines mean that the substituent may be in the α or β configuration having intense uterotrophic and estrogenic activity and very intense antigonadotrophic activity and their preparation.

3,776,903

PROCESS OF PREPARING 6-AZAURACIL

William Drell, Del Mar, and Donald E. Gueffroy, San Diego, Calif., assignors to Calbiochem, La Jolla, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 112,775, Feb. 4, 1971. This application Aug. 10, 1972, Ser. No. 279,999
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS 15 Claims

6-azauracil is produced by combining thiosemicarbazide, glyoxylic acid, and dimethyl sulfate in aqueous solution. Cyclization occurs, with the production of the desired product. The procedure is simple, gives good yields, and requires only commercially available starting materials, and is readily adapted to continuous flow synthesis.

3,776,904

5-NITROFURFURYLIDENALKYL DERIVATIVES, PROCESS FOR THEIR MANUFACTURE AND THEIR USE AS FEEDSTUFF ADDITIVES

Henry Martin and Stefan Janiak, Basel, Switzerland, Georg Pissiotas, Lorrach, Germany, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of abandoned application Ser. No. 15,936, Mar. 2, 1970. This application Oct. 4, 1971, Ser. No. 186,486
Claims priority, application Switzerland, Mar. 4, 1969, 3,273/69
Int. Cl. C07d *33/52*
U.S. Cl. 260—240 A 4 Claims

New 5-nitrofurfurylidenalkyl compounds substituted by a nitrogen containing heterocycle are disclosed. They are useful as feedstuffs and feedstuff additives for farm animals. They have antiparasitic, antibacterial and growth stimulating properties.

3,776,905

STYRYLTRIAZOLES, THEIR USE FOR THE OPTICAL BRIGHTENING OF ORGANIC MATERIALS, AND PROCESSES FOR THEIR MANUFACTURE

Reinhard Zweidler, Basel, Guglielmo Kabas, Binningen, Hans Schlaepfer, Basel, and Ian John Fletcher, Munchenstein, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Dec. 6, 1971, Ser. No. 205,287
Claims priority, application Switzerland, Dec. 11, 1970, 18,366/70
Int. Cl. C09b *23/14*
U.S. Cl. 260—240.1 14 Claims

The invention relates to new styryltriazoles which in the 2-position possess a coumarinyl-(7) group which is substituted in the 3-position. These compounds are prepared by known methods. They are useful as optical brighteners for organic material.

3,776,906

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - (1,2,5 - THIADIAZOL - 3 - YL)CARBONYLTHIOMETHYL - 3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,323
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 44 Claims

7[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)]-3-(1,2,5-triadiazol - 3 - yl)carbonylthiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are specially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,776,907

7-[D-(α-AMINO-α-PHENYL-, 2-THIENYL- AND 3-THIENYL-ACETAMIDO)] - 3 - (1,2,3-THIADIAZOL-4- OR 5-YL)-CARBONYLTHIOMETHYL-3-CEPHEM-4-CARBOXYLIC ACIDS

John Michael Essery and Lee Cannon Cheney, Fayetteville, N.Y., assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed June 12, 1972, Ser. No. 261,767
Int. Cl. C07d 99/24
U.S. Cl. 260—243 C 88 Claims

7-[D-(α-amino-α-phenyl-, 2-thienyl- and 3-thienyl-acetamido)-3-(1,2,3-thiadiazol-4- or 5-yl)carbonylthiomethyl-3-cephem-4-carboxylic acids and their nontoxic, pharmaceutically acceptable salts are valuable as antibacterial agents, as nutritional supplements in animal feeds, as agents for the treatment of mastitis in cattle and as therapeutic agents in poultry and animals, including man, and are especially useful in the treatment, particularly by oral administration, of infectious diseases caused by many Gram-positive and Gram-negative bacteria. Also included in this invention are the corresponding pivaloyloxymethyl, acetoxymethyl, methoxymethyl, acetonyl and phenacyl esters of such acids and their nontoxic, pharmaceutically acceptable acid addition salts.

3,776,908

HETEROCYCLIC AMINE ESTERS OF 2-PHENYL OR 2-PROPYL-4-PENTYNOIC ACID

Guido Cerbai, Via C. Loquez, 7 Pisa, Italy, and Luigi Turbanti, Via B. Da Padule, 10 Pisa, Italy

No Drawing. Original application Aug. 6, 1968, Ser. No. 750,479, now Patent No. 3,687,955, dated Aug. 29, 1972. Divided and this application June 23, 1972, Ser. No. 265,753
Claims priority, application Italy, Aug. 9, 1967, 19,363/67
Int. Cl. C07d 87/36
U.S. Cl. 260—247.2 B 1 Claim

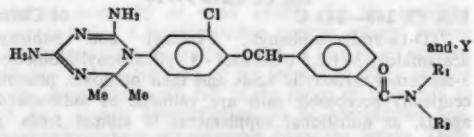
A series of alkylamine esters and heterocyclic amine esters of 2-phenyl or 2-propyl-4-pentynoic acid are provided along with physiologically acceptable salts thereof. These compounds are effective therapeutic agents having antispasmodic action as well as a regulatory effect on gastric and intestinal hyperkinesia. The production of these compounds is also provided.

3,776,909

4,6-DIAMONO-1(p-BENZYLOXYPHENYL-1,2-DIHYDRO-2,2-DIMETHYL-s-TRIAZINES

Bernard R. Baker, deceased, by Reba Baker, legal representative, Santa Barbara, Calif., and Wallace T. Ashton, Charleston, S.C., assignors to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Filed Apr. 19, 1972, Ser. No. 245,662
Int. Cl. C07d 55/20
U.S. Cl. 260—249.9 4 Claims



NR_1R_2=$N(CH_3)_2$ and $N(C_2H_5)_2$

Y=pharmaceutically acceptable acid addition salts thereof

where R_1 and R_2 are Me, the compounds are useful in inhibiting Walker 256 carcinosarcoma in rats as injectables utilizing a dosage range of about 0.1 to 6 mg./kg./day and also in inhibiting Dunning leukemia ascites in the same animal (because of transport by passive diffusion). This compound particularly has been found to have suitable transport across the blood/brain barrier in dogs.

3,776,910

PRODUCTION OF 5-(1',3'-DIAZACYCLOALK-2'-ENYL)-OXDIAZOLES-(1,2,4)

Helmut Hagen, Frankenthal, Friedrich Becke, Heidelberg, and Juergen Niemeyer, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 18, 1971, Ser. No. 125,900
Int. Cl. C07d 51/28
U.S. Cl. 260—256.4 H 4 Claims

The production of 5-(1',3'-diazacycloalk - 2' - enyl)-oxidazoles-(1,2,4) by reaction of 5-halomethyloxdiazoles with diaminoalkanes and elementary sulfur, and the novel 5 - (1',3' - diazacycloalk - 2' - enyl) - oxidazoles - (1,2,4) themselves. The compounds of the invention have hypotensive action and are assistants for the textile industry, plant protection agents and valuable starting materials for the production of plant protection agents, pharmaceuticals and dyes.

3,776,911

2-AMINO-5-OXO-5,6-DIHYDRO-s-TRIAZOLO [1,5-c]PYRIMIDINES

Gilbert Joseph Stacey, Macclesfield, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Continuation-in-part of abandoned application Ser. No. 22,047, Mar. 23, 1970. This application Nov. 2, 1971, Ser. No. 195,048
Claims priority, application Great Britain, Apr. 17, 1969, 19,635/69
Int. Cl. C07d 51/46
U.S. Cl. 260—256.4 F 7 Claims

5 - oxo-5,6-dihydro-s-triazolo[1,5-c]pyrimidine derivatives bearing an amino or substituted amino group in the 2-position, an alkyl or aralkyl group in the 6-position, an alkyl group in the 8-position, and optionally, an alkyl group in the 7-position, for example, 2-amino-5,6-dihydro - 5 - oxo-6,8-di-n-propyl-s-triazolo[1,5-c]pyrimidine. These compounds are effective in preventing bronchospasm and can be used in the treatment of asthma.

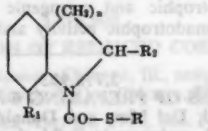
3,776,912

1-(ALKENYLTHIOCARBONYL)-DECAHYDROQUINOLINES

Elmar Sturm, Arlesheim, Hans Joerg Cellarius, Riehen, and Christian Vogel, Binningen, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,778
Claims priority, application Switzerland, Jan. 14, 1971, 553/71
Int. Cl. C07d 33/02
U.S. Cl. 260—283 S 3 Claims

Substituted azabicycloalkanes of the Formula I



(I)

wherein R represents an alkyl radical which contains 2 or 2 carbon atoms and is substituted by chlorine or a straight-chain or branched alkenyl radical containing 3 or 4 carbon atoms, R_1 and R_2 represent hydrogen or the one represents methyl and the other represents hydrogen, and *n* is the number 1 or 2, may be used for influencing the growth of plants, preferably for combating weeds in rice-cultures.

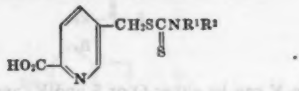
3,776,913

CERTAIN DITHIO-CARBAMATE DERIVATIVES OF 5-HYDROXYMETHYL-PICOLINIC ACID

Hiroyoshi Hidaka, Nagoya, and Ikuo Matsumoto and Junji Yoshizawa, Tokyo, Japan, assignors to Banyu Pharmaceutical Co., Ltd., Tokyo, and Hiroyoshi Hidaka, Nagoya-shi, Japan

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,904
Claims priority, application Japan, Apr. 16, 1971, 46/23,892; Nov. 29, 1971, 46/95,282
Int. Cl. C07d *29/10, 31/50*
U.S. Cl. 260—293.69 1 Claim

Picolinic acid derivates having the formula:



wherein R^1 represents a lower alkyl group; and R^2 represents hydrogen or a lower alkyl group, or R^1 and R^2 together may form a heterocyclic ring with nitrogen; can be prepared by reacting 5-(hydroxy or halo-methyl)-picolinic acid or ester thereof with an alkylisocyanate or dithiocarbamates, and if the ester is formed, hydrolyzing said ester to the acid form. These compounds have been proven to be effective anti-inflammatory agents or anti-allergic agents and have been found to be physiologically active to the circulatory system, nervous system, and to the sensory organs.

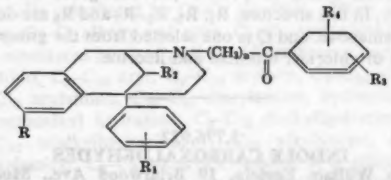
3,776,914

5-PHENYLBENZOMORPHAN DERIVATIVES AND SALTS THEREOF

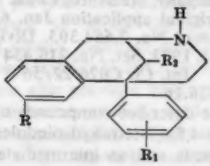
Toshio Atsumi, Kenji Kobayashi, and Yoshiaki Takebayashi, Takarazuka, and Hisao Yamamoto, Nishinomiya, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Jan. 25, 1971, Ser. No. 109,621
Claims priority, application Japan, Jan. 27, 1970, 45/7,584; Jan. 28, 1970, 45/7,894
Int. Cl. C07d *39/00*
U.S. Cl. 260—293.54 8 Claims

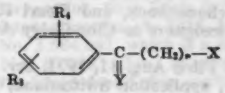
Benzomorphan derivatives of the formula,



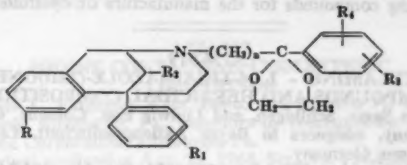
wherein R is a hydrogen atom, a hydroxyl group, or a C_1–C_3 alkoxy group; R_1 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a hydroxyl group, a trifluoromethyl group, an amino group, a C_1–C_3 alkylthio group, a nitro group or an alkanoyloxy group; R_2 is a hydrogen atom or a C_1–C_3 alkyl group; R_3 is a hydrogen atom, a halogen atom, a C_1–C_3 alkyl group, a C_1–C_3 alkoxy group, a C_1–C_3 alkylthio group, a nitro group, a trifluoromethyl group, an amino group or a hydroxyl group; R_4 is a hydrogen atom, a C_1–C_3 alkoxy group, a halogen atom or a C_1–C_3 alkyl group; and *n* is an integer of 2–4, which are useful as non-addicted analgesics and pain-relieving agents with calming effects. These benzomorphan derivatives are prepared by reacting a 6,7-benzomorphan derivative of the formula,



wherein R, R_1 and R_2 are as defined above, with a halogen derivative of the formula,



wherein R_3, R_4 and *n* are as defined above; X is a halogen atom; and Y is an oxygen atom or an ethylenedioxy group, and further, in the case of Y=ethylenedioxy group, by hydrolyzing the resulting ethylenedioxy derivative of the formula,



wherein R, R_1, R_2, R_3, R_4 and *n* are as defined above.

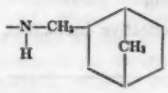
3,776,915

TETRASILA-ADAMANTANE COMPOUNDS

Cecil L. Frye, Midland, and Jerome M. Klosowski, Monitor Township, Bay County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Mar. 1, 1972, Ser. No. 230,937
Int. Cl. C07d *103/02*
U.S. Cl. 260—293.56 21 Claims

The sulfate salts of tetrasila-adamantane compounds in which at least one silicon atom is substituted with a nitrogen-containing radical, such as



are useful as emulsifiers.

3,776,916

CERTAIN N-PHENACYL PYRIDINIUM HALIDES

Wendell Gary Phillips, Olivette, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Original application Nov. 21, 1969, Ser. No. 878,918, now Patent No. 3,702,361, dated Nov. 7, 1972. Divided and this application June 7, 1972, Ser. No. 260,672
Int. Cl. C07d *31/46*
U.S. Cl. 260—294.9 12 Claims

Pyridinium, pyridazinium, pyrimidinium, and pyrazinium halides respectively having an N-(phenacyl) substituent and the corresponding ylids obtained therefrom by alkaline treatment which compounds are useful as herbicides and/or insecticides.

3,776,917

2-AMINO-6-PHENALKYL-AMINOPYRIDINES AND DERIVATIVES THEREOF

Thomas A. Mann, New York, N.Y., and Frank J. Villani, West Caldwell, N.J., assignors to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 49,577, June 24, 1970. This application June 5, 1972, Ser. No. 259,927
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R 8 Claims

This invention relates to substituted phenylalkylaminopyridines and substituted phenacylaminopyridines, to their use as hypoglycemic agents and to the processes useful in the preparation thereof.

3,776,918
HALOGENO-6-HYDROXY-PYRIDONE-(2) COMPOUNDS

Gert Hegar, Schonenbuch, and Henri Riat, Arlesheim, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,963
Claims priority, application Switzerland, Aug. 19, 1970, 12,371/70
Int. Cl. C07d *31/42*
U.S. Cl. 260—296 R **5 Claims**

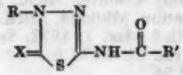
3-halogeno-6-hydroxy-pyridone - (2) compounds and process for their manufacture by halogenating the corresponding 6-hydroxy-pyridone-(2) compounds. Valuable starting compounds for the manufacture of dyestuffs.

3,776,919
2-ACYLAMINO - 1,3,4-THIADIAZOLE-(THI)ONE-(5) COMPOUNDS AND HERBICIDAL COMPOSITIONS

Klaus Sasse, Schildgen, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Jan. 11, 1971, Ser. No. 105,741
Claims priority, application Germany, Jan. 24, 1970, P 20 03 145.2
Int. Cl. C07d *91/62*
U.S. Cl. 260—306.8 D **17 Claims**

Novel 2-acylamino-1,3,4-thiadiazolone-(5) and 2-acylamino-1,3,4-thiadiazole thione-(5) compounds of the formula



wherein

R and R' are unsubstituted or substituted alkyl, cycloalkyl, cycloalkenyl, aralkyl or aryl; and
X is oxygen or sulfur

are outstandingly effective herbicides, particularly selective herbicides.

3,776,920
2-(N-2-CYANOETHYLDITHIOCARBAMYL-METHYLENE)BENZIMIDAZOLES

John Joseph D'Amico, Akron, Ohio, assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,369
Int. Cl. C07d *49/38*
U.S. Cl. 260—309.2 **5 Claims**

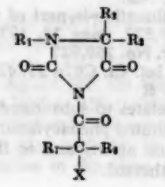
2-(N-2 - cyanoethyldithiocarbamylmethylene)benzimidazoles are disclosed which are toxicological agents for the control of bacteria and fungi.

3,776,921
HYDANTOIN ACYL HALIDES AND THEIR USE AS INSECTICIDES

Gophal H. Singhal, Westfield, N.J., and Joseph H. Lesser, Woodside, N.Y., assignors to Esso Research and Engineering Company

No Drawing. Original application Apr. 23, 1970, Ser. No. 31,405, now abandoned. Divided and this application Dec. 17, 1971, Ser. No. 209,449
Int. Cl. C07d *49/32*; C07f *9/08*
U.S. Cl. 260—309.5 **6 Claims**

Acyl hydantoin derivatives defined by the following structural formula:

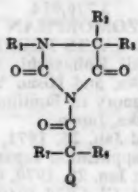


wherein R_1 is one selected from the group consisting of C_1–C_8 lower alkyl optionally substituted by chlorine, bromine, C_1–C_8 alkoxy and C_1–C_8 alkylthio; C_2–C_8 alkenyl; C_3–C_8 alkynyl; C_3–C_8 cycloalkyl; or phenyl optionally substituted with chlorine, bromine, trifluoromethyl or NO_2. R_2 and R_3 can be the same or different and either one is selected from the group consisting of hydrogen, C_1–C_4 alkyl, C_1–C_4 chloroalkyl, phenyl optionally substituted with chlorine or nitro and C_1–C_4 alkoxy. X is one selected from the group consisting of chlorine, bromine, fluorine and a moiety defined by

wherein Y can be either O or S and R_4 and R_5 can be the same or different and selected from the group consisting of C_1–C_8 alkoxy, C_1–C_8 alkyl, C_1–C_8 alkylthio, phenyl optionally substituted with chlorine or bromine, phenoxy optionally substituted with chlorine or bromine; R_6 and R_7 can be the same or different and can be selected from the group consisting of hydrogen, and C_1–C_8 alkyl.

Organic compounds represented by this structure have been found to have pesticidal, particularly insecticidal, activity.

Compounds represented by the following structure:



have been found to possess post-emergence herbicidal activity. In this structure, R_1, R_2, R_3, R_7 and R_8 are defined as hereinabove, and Q is one selected from the group consisting of chlorine, bromine and fluorine.

3,776,922
INDOLE CARBOXALDEHYDES

Joseph William Epstein, 19 Briarwood Ave., Monroe, N.Y. 10950, and Leon Goldman, 126 Grandview Ave., Nanuet, N.Y. 10954

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,976
Int. Cl. C07d *27/54*
U.S. Cl. 260—326.5 B **3 Claims**

This disclosure describes derivatives of 5-methoxyindolecarboxaldehydes variously useful as antimicrobial agents, diuretics, central nervous system depressants, and central nervous system antidepressants.

3,776,923
2-NITRO-4-OXO-4,5,6,7-TETRAHYDROINDOLE

William Alan Remers, West Lafayete, Ind., and Martin Joseph Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Original application Jan. 6, 1970, Ser. No. 1,043, now Patent No. 3,654,303. Divided and this application Jan. 4, 1972, Ser. No. 215,434
Int. Cl. C07d *27/56*
U.S. Cl. 260—326.16 **1 Claim**

This disclosure describes compounds of the class of 2-substituted-4-oxo-4,5,6,7-tetrahydroindoles useful as anti-inflammatory agents and as intermediates.

3,776,924
N-[2-(4,5,6,7-TETRAHYDROBENZOTHIENYL)]-UREAS

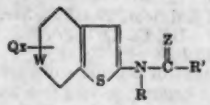
Charles A. Lundberg, Jr., Colonia, and John E. Engelhart, Westfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Original application May 20, 1970, Ser. No. 39,153, now Patent No. 3,705,910, dated Dec. 12, 1972. Divided and this application Nov. 14, 1972, Ser. No. 306,501

Int. Cl. C07d *63/22*

U.S. Cl. 260—332.2 R 9 Claims

Compounds having the following structural formula:



wherein W is CH_2 or CH—Q or a heteroatom selected from the group consisting of O, $S(O)_n$ (where *n* equals 0–2) and N—R; Q can be hydrogen, C_1–C_{15} alkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_3–C_{30} cycloalkyl optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; C_1–C_{20} alkoxy, C_3–C_{30} cycloalkoxy, C_1–C_{20} alkylthio, C_2–C_{20} dialkylamino, C_6–C_{30} dicycloalkylamino, cyano, chlorine, bromine, C_2–C_8 alkyl carboxy, C_1–C_5 carboalkoxy, C_1–C_4 perfluoroalkyl, thiocyano, C_1–C_6 alkylsulfoxide, C_1–C_6 alkylsulfone, C_6–C_{10} aryl and C_5–C_{20} heterocyclic; X ranges from 0–6 when Q is a C_1–C_{15} optionally substituted alkyl group but for all other values of Q, X is no greater than 2; R is selected from the group consisting of hydrogen, C_1–C_{16} alkyl, C_3–C_{10} cycloalkyl, C_1–C_{10} alkoxy, C_3–C_{12} cycloalkoxy and C_1–C_{10} alkylthio. Each of the above enumerated R groups may be optionally substituted by chlorine, bromine, cyano, C_1–C_4 alkoxy, C_1–C_4 alkylthio and nitro; R′ is selected from the group consisting of: hydrogen, C_1–C_{15} alkyl optionally substituted by C_1–C_4 alkylthio, chloro, bromo, cyano, C_1–C_4 alkoxy and nitro, C_3–C_{10} cycloalkyl optionally substituted by C_1–C_4 alkyl, chloro, bromo and C_1–C_4 alkylthio, C_6–C_{10} aryl, C_6–C_{10} aryloxy, C_6–C_{10} arylthio, C_6–C_{10} arylamino, C_{12}–C_{20} diarylamino, hydrazino, C_1–C_8 monoalkyl hydrazino, C_2–C_{12} dialkylhydrazino, and C_3–C_{12} trialkylhydrazino, C_1–C_{10} alkylamino, C_2–C_{20} dialkylamino, C_2–C_6 alkoxyalkylamino; Z is either O or S. These compounds have been found to possess post emergent herbicidal activity.

3,776,925
CYCLIC ORGANIC COMPOUNDS

George Holan, Brighton, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organization, Campbell, Australian Capital Territory, Australia

No Drawing. Filed July 13, 1971, Ser. No. 162,262

Claims priority, application Australia, July 23, 1970, 1,945/70; Feb. 5, 1971, 3,948/71; Feb. 12, 1971, 4,010/71

Int. Cl. C07d *3/00*

U.S. Cl. 260—333 3 Claims

The invention provides new derivatives of 2,2-diphenyl-3,3-dimethyloxetane in which the phenyl groups are substituted with alkoxy, alkylthio and/or methylenedioxy groups. The new compounds have insecticidal properties and the invention also provides insecticidal compositions thereof. The compounds may be made by irradiating a mixture of the appropriately substituted benzophenone and isobutylene with ultra-violet radiation.

3,776,926
METHOD FOR MACROCYCLIC LACTONES

Paul R. Story, Athens, Ga., assignor to Research Corporation, New York, N.Y.

No Drawing. Application Jan. 9, 1970, Ser. No. 10,121, now Patent No. 3,584,067, which is a division of application Ser. No. 697,593, Jan. 15, 1968, now Patent No. 3,528,898. Divided and this application Nov. 24, 1970, Ser. No. 92,546

Int. Cl. C07d *9/00*

U.S. Cl. 260—343 5 Claims

Macrocyclic compounds are produced when cyclic ketone di- and triperoxides are decomposed by irradiation with ultraviolet light or by heating to a temperature above 100° C.

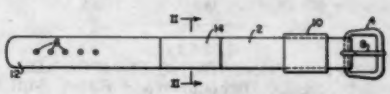
3,776,927
IODINE CONTAINING CHOLESTERIC COMPOUNDS

James L. Fergason, Kent, Ohio, and Newton N. Goldberg, Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Original application Aug. 22, 1968, Ser. No. 754,582, now Patent No. 3,657,538, dated Apr. 18, 1972. Divided and this application Sept. 24, 1970, Ser. No. 75,179

Int. Cl. C07c *169/58*

U.S. Cl. 260—397.2 9 Claims



Increasing dosages of X-ray radiation progressively lower the color-play range of cholesteric-phase liquid-crystal materials. The effect is enhanced when an effective amount of an iodine-containing compound is used in the liquid-crystal material. Novel iodine-containing compounds are described, and articles are disclosed that give direct-reading indication of the dosage of X-ray radiation that they have received, without need for a separate development operation.

3,776,928
CRYSTAL MODIFIER AND METHOD FOR SOLVENT SEPARATION OF FATTY MATERIALS

Donald D. Staker and Richard H. Plantholt, Cincinnati, Ohio, and David J. Kriege, Newport, Ky., assignors to Emery Industries, Inc., Cincinnati, Ohio

No Drawing. Original application Apr. 5, 1968, Ser. No. 719,251, now Patent No. 3,649,657. Divided and this application Oct. 12, 1971, Ser. No. 188,530

Int. Cl. C07c *69/34, 69/80;* C08h *9/00*

U.S. Cl. 260—404.8 8 Claims

Crystal modifiers useful in the separation of mixtures of more saturated from less saturated fatty acids or mixtures of relatively saturated and relatively unsaturated triglycerides into saturated and unsaturated fractions. Also a method for crystallization of fatty materials using said crystal modifiers. The crystal modifiers are prepared in an acidolysis reaction in which polybasic acids are reacted with fatty acid esters of polyhydric alcohols.

3,776,929
PHOSPHINITE, PHOSPHONITE, THIOPHOSPHINITE, AND DITHIOPHOSPHONITE COMPOUNDS OF PALLADIUM AND PLATINUM

Joseph J. Mrowca, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 18, 1971, Ser. No. 189,834

Int. Cl. C07f *15/00, 15/04*

U.S. Cl. 260—429 R 20 Claims

Disclosed herein are compounds having the formula $(L)_2MXY$, wherein (L) is a phosphinite, phosphonite,

thiophosphinite, or dithiophosphonite ligand, M is Pd or Pt and X and Y are alike or different and are selected from chlorine, bromine, iodine, various substituted and unsubstituted alkyls and aryls, cyano, $SnCl_3$, isocyanato, thiocyanato, aroyl and lower perfluoroalkyl groups. The process involves reacting one equivalent of a source of MXY with two or more equivalents of a selected phosphorus-containing ligand. The products are useful in the alkoxycarbonylation of olefins and in the polymerization of acetylene.

3,776,930

SOLID STATE CONVERSION OF A METAL OXIDE TO THE CORRESPONDING METAL CARBOXYLATE

Yu-Lin Wu, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 25, 1971, Ser. No. 156,981
Int. Cl. C07f *3/06*
U.S. Cl. 260—429.9 **7 Claims**

A solid metal oxide dispersed in an inert dispersant is contacted with an aromatic carboxylic acid under reaction conditions for a time sufficient to form the corresponding metal salt of the aromatic carboxylic acid. The formed metal salt is also in the solid state and is also dispersed in the inert dispersant. The metal salt, in the dispersant, is useful as a catalyst in the disproportionation of salts of aromatic carboxylic acids.

3,776,931

COPPER-CONTAINING COMPOUNDS

Derek Bryce-Smith, Highland Wood House, Mill Lane, and Ernest Thomson Blues, 36 Reeds Ave., both of Reading, England

No Drawing. Filed Jan. 12, 1971, Ser. No. 105,960
Claims priority, application Great Britain, Jan. 13, 1970, 1,663/70
Int. Cl. C07f *1/08*
U.S. Cl. 260—438.1 **40 Claims**

A new copper compound, copper ketenide, is disclosed, useful as a complexing agent to provide complexes, particularly with metal halides, useful as catalysts for the oxidation of hydrocarbons, particularly the oxidation of ethylene and propylene to ethylene oxide and propylene oxide respectively. Copper ketenide may be prepared by reaction of a copper compound with ketone, which ketene may be preformed or formed in the reacting medium. The reaction may be carried out chemically or electrochemically.

3,776,932

METAL-ORGANO COMPOUNDS WITH STERICALLY EXPOSED METAL-METAL BONDS, AND A METHOD FOR THEIR PRODUCTION

Guido P. Pez, Boonton, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,144
Int. Cl. C07f *7/00*
U.S. Cl. 260—429.3 **24 Claims**

Metal-organo complex characterized as having at least one sterically exposed metal-metal bond, and having the structure:

$$R_nM \equiv\equiv M'R_n$$

wherein R represents a ligand which may contain one or more atoms of carbon, hydrogen, oxygen, nitrogen, sulfur or phosphorus; *n* is an integer of from 1 to 3; M and M' each represent the same or a different transition metal; and the symbol

$\equiv\equiv$

represents at least one sterically exposed metal-metal bond.

The preparative method involves the low temperature reaction between an alkali metal naphthalene in an ethereal solvent, with the dihalogenide of at least one metal-organic species. The reaction mixture is allowed to slowly warm to ambient temperatures, the solvent is evaporated, and the naphthalene sublimed at temperatures below 40° C. The remaining crude product is extracted with an organic solvent, the extract is separated from the insoluble portion, and the product recovered by evaporating the solvent.

The metal-organo complex has utility as an absorbent of nitrogen when present as a contaminant in argon.

3,776,933

METHOD OF PREPARING AMIDOSILANES

Louis H. Toporcer, Ingersol Township, Midland County, and Irvin D. Crossan, Homer Township, Midland County, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,606
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 E **11 Claims**

Mixing metal salts of organic amides with organohalosilanes in an inert organic solvent is a useful method for preparing amidosilanes of the formula

$$R''_xSi\{N(R)C(O)R'\}_{4-x}$$

where R is methyl, ethyl, propyl or phenyl, R' is methyl, ethyl or phenyl, R'' is a hydrocarbon radical and *x* is 1, 2 or 3. The by-produced metal halide is separated from the amidosilane solution which can be used to make silicone elastomers and resins. The organic solvent can be separated from the amidosilane to provide the amidosilane for use in silicone elastomers and resins where solvents are not desired.

3,776,934

METHYLVINYLDI-(-N-METHYLACETAMIDO) SILANE

Louis H. Toporcer, Ingersol Township, Midland County, and Joseph N. Clark, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,607
Int. Cl. C07f *7/10*
U.S. Cl. 260—448.2 N **1 Claim**

Methylvinyldi-(-N-methylacetamido)silane is useful as a chain extender in making low modulus room temperature vulcanizable silicone elastomers possessing fast cure and adhesion to substrates.

3,776,935

PROCESS FOR THE PRODUCTION OF POLYISOCYANATES

James D. McClure and George W. Conklin, Oakland, Calif., assignors to Shell Oil Company, New York, N.Y.

No Drawing. Filed Aug. 26, 1971, Ser. No. 175,334
Int. Cl. C07c *119/04*
U.S. Cl. 260—453 PC **10 Claims**

An improved process for preparing carbocyclic aromatic isocyanates comprises contacting a carbocyclic aromatic polynitro compound with carbon monoxide in the presence of a catalyst system consisting of certain noble metal halides, heteroaromatic nitrogen compounds and an iron borate.

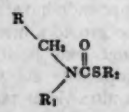
3,776,936

THIOCARBAMIC ACID ESTER PESTICIDES

Gopal H. Singhal, Westfield, and Robert E. Turkos, Fords, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed May 19, 1970, Ser. No. 38,896
Int. Cl. C07c *155/08*
U.S. Cl. 260—455 A **9 Claims**

Thiocarbamic acid esters characterized by the following structural formula:



wherein R is a cycloalkyl group containing from 3 to 5 carbon atoms, said group being optionally substituted by C_1–C_4 alkyl groups; R_1 can be same as R or it can also be a C_1–C_4 alkyl group optionally substituted by a C_1–C_4 alkoxy, C_1–C_4 alkylthio, cyano or a carbethoxy group; R_2 is a C_1–C_6 alkyl group. Compounds having these structures possess excellent pre-emergent herbicidal activity along with excellent crop tolerance. In addition, these compounds possess good fungicidal activity.

3,776,937

PROCESS FOR THE MANUFACTURE OF AROMATIC NITRILES

Abraham P. Gelbein, Plainfield, N.J., assignor to The Lummus Company, Bloomfield, N.J.

No Drawing. Filed June 23, 1972, Ser. No. 265,956

Int. Cl. C07c *121/12, 121/56*

U.S. Cl. 260—465 B **4 Claims**

In the production of aromatic polynitriles having at least one pair of nitrile groups in the ortho position relative to each other by the reaction of an alkyl aromatic hydrocarbon with ammonia, the problem of imide formation can be at least partially resolved by passing the product stream of the reaction over a dehydration catalyst to convert imides present to additional nitrile product. If necessary, additional ammonia can be added.

3,776,938

DIHYDRO-PGE_1

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. This application Feb. 12, 1971, Ser. No. 115,109

Int. Cl. C07c *61/36*

U.S. Cl. 260—468 D **4 Claims**

The prostaglandins dihydro-PGE_1 and dihydro-$PGF_{1\alpha}$, and their salts and esters are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,776,939

DIHYDRO-$PGF_{1\alpha}$

Sune Bergstrom and Jan Sjovall, both of Kemiska Institutionen, Karolinska Institutet, Stockholm 60, Sweden

No Drawing. Application Feb. 12, 1971, Ser. No. 115,109, which is a continuation-in-part of application Ser. No. 203,752, June 20, 1962, now Patent No. 3,598,858, which is a continuation-in-part of abandoned application Ser. No. 199,209, Apr. 9, 1962, which in turn is a continuation-in-part of application Ser. No. 738,514, May 28, 1958, now Patent No. 3,069,322. Divided and this application July 3, 1972, Ser. No. 268,587

Int. Cl. C07c *61*

U.S. Cl. 260—468 D **5 Claims**

The prostaglandin dihydro-$PGF_{1\alpha}$, and its salts and esters are disclosed. These novel compounds are useful for a variety of pharmacological purposes, including use as smooth muscle stimulants and as cardiovascular agents.

3,776,940

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon le Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation of application Ser. No. 103,337, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,339

Int. Cl. C07c *61/32, 69/74*

U.S. Cl. 260—468 G **32 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,776,941

INTERMEDIATES FOR PRODUCING PROSTAGLANDINS

George E. Just, 499 Mount Pleasant Ave., Westmount, Quebec, Canada, and Chaim Simonovitch, Rishon le Zion, Israel; said Simonovitch assignor to said Just

No Drawing. Continuation of application Ser. No. 103,341, Dec. 31, 1970, which is a continuation-in-part of application Ser. No. 657,085, July 31, 1967, both now abandoned. This application Aug. 17, 1972, Ser. No. 281,340

Int. Cl. C07c *61/36, 69/74*

U.S. Cl. 260—468 G **16 Claims**

Prostaglandin $F_{1\alpha}$, prostaglandin $F_{1\beta}$, and analogs of those are produced from bicyclo[3.1.0]hexane intermediates.

3,776,942

SUBSTITUTED 1 - (2 - HYDROXYBENZYLIDENE)-4 - ALKOXYCARBONYLTHIOSEMICARBAZIDES AND RELATED COMPOUNDS

George A. Miller, Glenside, and Stanley A. Greenfield, Ambler, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,720

Int. Cl. C07c *159/00*

U.S. Cl. 260—470 **7 Claims**

Novel compounds belonging to the class of halo-, nitro- or hydroxy-salicylaldehyde thiosemicarbazones having a 4-N-substituted alkoxy(aryl)-carbonyl, thioalkoxy(aryl)-carbonyl, alkyl(aryl)-carbonyl, thiocarbamoyl, carbamoyl, or phosphoryl group. They have utility as fungicides.

3,776,943

4- (AND 5-) LOWERALKOXYCARBONYLAMINO-1-NAPHTHYL-N-LOWERALKYLCARBAMATES

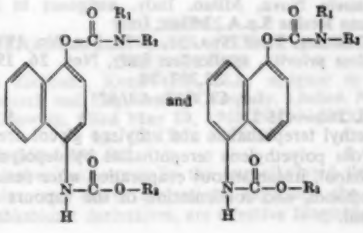
Louis H. Peterson, Woodbridge, and Edward F. Rogers, Middleton, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

No Drawing. Filed Sept. 25, 1970, Ser. No. 75,656

Int. Cl. C07c *125/06*

U.S. Cl. 260—471 C **6 Claims**

Naphthyl-N-loweralkylcarbamates having the formulae:



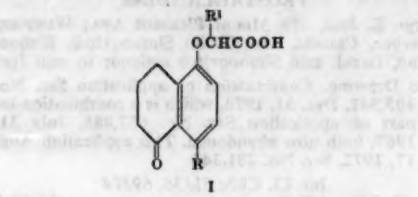
wherein R_1 and R_2 are members selected from the group consisting of loweralkyl having from 1 to 2 carbon atoms and R_3 is a member selected from the group consisting of loweralkyl having from 1 to 6 carbon atoms are prepared from 4- or 5-amino-1-naphthol and display activity as insecticides, as plant nematocides and as fruit thinning agents.

3,776,944
TETRALONEOXY ACETIC ACIDS AND ESTERS THEREOF

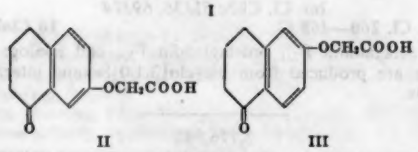
Richard E. Brown, Hanover, N.J., Paul Cavanagh, Oshawa, Ontario, Canada, and John Shavel, Jr., Mendham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed Sept. 16, 1971, Ser. No. 181,199
Int. Cl. C07c *69/76*
U.S. Cl. 260—473 F **12 Claims**

Tetraloneoxy acetic acids having the following structural formulas are described:

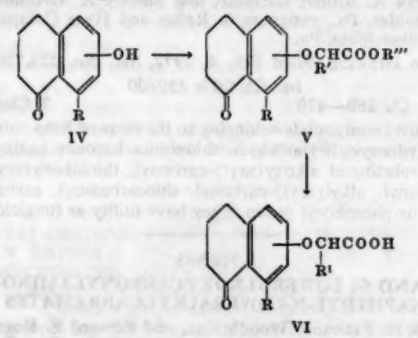


I



II III

wherein R is hydrogen or lower alkoxy and R^1 is hydrogen, lower alkyl or aryl. These compounds are prepared by the following reaction scheme:



IV V VI

They are useful as anti-flammatory agents.

3,776,945
METHOD OF DEPOLYMERIZING POLYETHYLENE TEREPHTHALATE

Ferdinando Ligorati, Giancarlo Aglietti, and Vittorio Emanuele Nova, Milan, Italy, assignors to Società Italiana Resine S.p.A., Milan, Italy

No Drawing. Filed Nov. 16, 1971, Ser. No. 199,352
Claims priority, application Italy, Nov. 26, 1970, 32,207/70
Int. Cl. C07c *69/82*
U.S. Cl. 260—475 D **5 Claims**

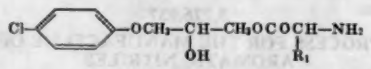
Dimethyl terephthalate and ethylene glycol are recovered from polyethylene terephthalate by depolymerising in methanol, instantaneous evaporation after removal of the methanol, and condensation of the vapours in cold methanol.

3,776,946
CHLORPHENESIN DERIVATIVES

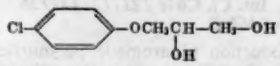
Yuichi Inai and Kanzo Okazaki, Tokyo, Katsutoshi Shimada, Niizamachi, and Kengo Kagei and Motoaki Bessho, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed Aug. 28, 1972, Ser. No. 284,358
Claims priority, application Japan, Sept. 3, 1971, 46/67,495
Int. Cl. C07c *101/00*
U.S. Cl. 260—482 R **3 Claims**

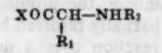
Novel chlorophenesin derivatives having the formula of



wherein R_1 is a hydrogen atom or a methyl group, and inorganic acid addition salts thereof are prepared by condensing chlorphenesin having the formula of



with a compound having the formula of

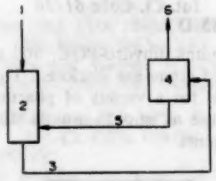


wherein R_1 is as defined above, X is a hydroxyl group or a halogen atom, and R_2 stands for an amino-protective group, and then splitting off the amino-protective group.

3,776,947
CONTINUOUS ESTERIFICATION PROCESS

Noboru Shimizu, Ibaraki, Sadao Yoshida, Suita, Kunihiro Kubota, Takatsuki, Daizo Kobayashi, Osaka-fu, and Takashi Ohara, Nishinomiya, Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Oct. 10, 1972, Ser. No. 295,811
Int. Cl. C07c *69/54*
U.S. Cl. 260—486 R **3 Claims**



In the process for continuously preparing acrylic acid esters or methacrylic acid esters by reacting acrylic acid or methacrylic acid with an excess of either methanol or ethanol in the liquid phase in the presence of an acidic catalyst, the method characterized in that the acrylic acid or methacrylic acid and alcohol are reacted in the reaction zone at a molar ratio of 1:1.2–5.0 at a temperature of 40–100° C.; in heating the resulting reaction product in an evaporating still to distill off the acrylic acid ester or methacrylic acid ester, water and alcohol, the concentration of the acrylic acid or methacrylic acid of the bottom liquid inside the evaporating still is maintained at 10–40% by weight; and the bottom liquid in an amount of at least 0.4 times by weight of the total amount of the acrylic acid or methacrylic acid and alcohol fed to the reaction zone is recycled from the evaporating still to the reaction zone.

3,776,948
PROCESS FOR THE PRODUCTION OF MONOACETIN AND GLYCERINE
Axel Kleemann, Oberursel, Gerd Schreyer, Grossauheim, Otto Weiberg, Neu-Isenburg, and Wolfgang Weigert, Offenbach (Main), Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany
No Drawing. Filed Aug. 7, 1970, Ser. No. 62,182
Claims priority, application Germany, Aug. 30, 1969, P 19 44 120.4
Int. Cl. C07c *29/02, 67/00*
U.S. Cl. 260—491 9 Claims
Glycerine is produced by reacting allyl acetate with aqueous peracetic acid. The monoacetin formed is converted to glycerine by alcoholysis or aqueous saponification after removal of unreacted allyl acetate, acetic acid and water.

3,776,949
PRODUCTION OF AROMATIC POLYCARBOXYLIC ACIDS
Abraham P. Gelbein, Plainfield, Benjamin J. Luberoff, Summit, Morgan C. Sze, Upper Montclair, and Richard T. Whitehead, Westfield, N.J., assignors to The Lummus Company, Bloomfield, N.J.
Filed Sept. 7, 1971, Ser. No. 178,263
Int. Cl. C07c *63/00, 63/26*
U.S. Cl. 260—515 P 24 Claims
Aromatic polycarboxylic acids and their anhydrides are produced from the corresponding nitriles by aqueous catalytic hydrolysis and countercurrent stripping to produce an acid ammonium salt of the aromatic acid, followed by thermal decomposition of the salt to form the acid, and purification if necessary.

3,776,950
N-CYANOPHOSPHINIMIDES
Ronald A. Mitsch, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
No Drawing. Continuation-in-part of application Ser. No. 808,656, Mar. 19, 1969, which is a continuation-in-part of application Ser. No. 482,585, Aug. 25, 1965, both now abandoned. This application Nov. 26, 1971, Ser. No. 202,667
Int. Cl. C07d *27/56, 31/46, 63/00*
U.S. Cl. 260—551 C 5 Claims
Novel substituted N-cyanophosphorus imides having a relatively high degree of hydrolytic stability are prepared by reacting a trivalent phosphorus compound with difluorodiazirine in the presence of an inert solvent. Such compounds have utility as pest control agents, corrosion inhibitors, plasticizers, flotation agents and petroleum additives.

3,776,951
PRODUCTION OF TETRAMETHYL SUBERIC ACID
Harry Failey, Keyingham, and Bertram Yeomans, Hessle, England, assignors to BP Chemical International Limited, Great Britain
No Drawing. Filed July 11, 1972, Ser. No. 270,802
Claims priority, application Great Britain, July 15, 1971, 33,148/71
Int. Cl. C07c *51/14, 55/02*
U.S. Cl. 260—533 A 13 Claims
2,2,7,7-tetramethyl suberic acid is made by reacting 2,7-dimethyloctene-4 with carbon monoxide in strong sulphuric acid, separating 2,2,7-trimethyloctanoic acid, feeding the 2,2,7-trimethyloctanoic acid to a rearrangement reaction with strong sulphuric acid to give 2,2,7,7-tetramethyl suberic acid, feeding the rearrangement product in strong sulphuric acid to the carbonylation zone, and recovering 2,2,7,7-tetramethyl suberic acid from the carbonylation product.

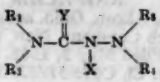
3,776,952
PREPARATION OF UNSATURATED ALDEHYDES AND ACIDS
Jamal S. Eden, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.
No Drawing. Filed May 2, 1968, Ser. No. 726,218
Int. Cl. C07c *51/32, 57/04*
U.S. Cl. 260—533 N 5 Claims
Unsaturated acids and aldehydes as acrylic acid and acrolein or methacrylic acid and methacrolein are prepared in excellent yields and at improved rates by the oxidation of an olefin as propylene or isobutylene in the presence of a catalyst containing chromium molybdate, tellurium oxide and phosphorus oxide.

3,776,953
PROCESS FOR SIMULTANEOUS PRODUCTION OF HALOMETHYLPHOSPHONIC DIHALIDES, BIS-(HALOMETHYL)-PHOSPHINIC HALIDES AND METHYLHALOMETHYLPHOSPHINIC HALIDES
Ludwig Maier, Kilchberg, Switzerland, assignor to Monsanto Company, St. Louis, Mo.
No Drawing. Filed Dec. 6, 1971, Ser. No. 205,343
Claims priority, application Switzerland, Dec. 16, 1970, 18,684/70
Int. Cl. C07f *9/42*
U.S. Cl. 260—543 P 6 Claims
Halomethylphosphonic dihalides, bis - (halomethyl)-phosphinic halides and methylhalomethylphosphinic halides are simultaneously produced by reacting phosphorus (white), alkali metal hydroxide, water and formaldehyde in the presence of a water-miscible monohydric alcohol to form a reaction mixture comprising alkali metal salt of methyl-hydroxymethyl phosphinic acid, alkali metal salt of bis(hydroxymethyl)phosphinic acid and the dialkali metal salt of hydroxymethyl phosphonic acid, removing volatile constituents from the reaction mixture and treating the acid salt reaction products with a halogenating agent (e.g. $SOCl_2$) thereby to convert said products to the corresponding halide derivative. The halides produced by the process are useful as flame retardants.

3,776,954
PROCESS FOR THE PRODUCTION OF THIOPHOSGENE
Hans-Dieter Rupp, Erlenbach, and Gerhard Meyer and Helmut Mägerlein, Obernburg, Germany, assignors to Akzo N.V., Arnhem, Netherlands
No Drawing. Filed July 24, 1972, Ser. No. 274,582
Int. Cl. C07c *153/01*
U.S. Cl. 260—543 14 Claims
A catalytic process for the production of thiophosgene by reduction of trichloromethane sulfenyl chloride with hydrogen sulfide at elevated temperatures and in the presence of at least one sulfide of the metals potassium, silver, barium, zinc, cadmium, lanthanum, tin, lead, vanadium, manganese or rhenium or at least one chloride of the metals chromium and magnesium, the catalyst being in an essentially water-free form. High yields of thiophosgene are obtained, and the process is especially adapted to be carried out in a continuous manner. Thiophosgene is known to be useful as an intermediate in the syntheses of many organic compounds.

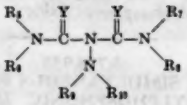
3,776,955
PESTICIDAL SEMICARBAZIDE AND BIURET DERIVATIVES
James Zielinski, Kenilworth, N.J., assignor to Esso Research and Engineering Company, Linden, N.J.
No Drawing. Filed May 29, 1968, Ser. No. 732,858
Int. Cl. C07c *159/00*
U.S. Cl. 260—552 SC 9 Claims
Semicarbazides, especially the tetraalkylated thiosemicarbazides, and biuret derivatives, especially the mono- and di-thiobiuret derivatives, are effective fungicides, bac-

tericides, and herbicides. Exemplary of preferred semicarbazides are those of the general formula



where R_1–R_4 can be unsubstituted or substituted hydrocarbyl and X can be hydrogen, or unsubstituted or substituted hydrocarbyl, and Y can be O or S.

Exemplary of preferred biuret derivatives are those of the general formula



where R_5–R_{10} can be H, or unsubstituted or substituted hydrocarbyl; and Y can be O or S. Typical R_1 to R_{10} hydrocarbyl groups include: (1) saturated or unsaturated, acyclic or cyclic, aliphatics such as, e.g., ethyl, propargyl, cyclohexyl, cyclohexenyl, etc.; and (2) aromatic or hetero-aromatic radicals such as phenyl, pyridyl, etc.

3,776,956
RESINOUS COMPOSITION

Izumi Yamane, Yokohama, Daini Saika, Funabashi, and Susumu Tomidokoro, Ichikawa, Japan, assignors to Lion Fat & Oil Co., Ltd., Yokoami, Sumida-ku, Tokyo, Japan

No Drawing. Filed Apr. 16, 1971, Ser. No. 134,851
Claims priority, application Japan, Apr. 25, 1970, 45/35,224, 45/35,225
Int. Cl. C07c *103/30*
U.S. Cl. 260—561 N **17 Claims**

A method of synthesizing specific ethylenic type unsaturated acrylamide (I) by effecting dehydrohalogenation of a specific ethylenic type unsaturated carboxylic halide (II) or halogenated carboxylic halide (III) and a specific amine (IV), wherein a specific amine (V) is employed as a dehydrohalogenating agent; and a copolymer consisting of the foregoing compound (I) and a monomer capable of copolymerizing with said compound (I) as well as a resinous composition comprising said copolymer.

3,776,957
METHOD FOR REMOVING COPPER FROM AQUEOUS SOLUTIONS OF ACRYLAMIDE

John D. Newkirk, Downers Grove, Ill., assignor to Nalco Chemical Company, Chicago, Ill.

No Drawing. Filed May 15, 1972, Ser. No. 253,073
Int. Cl. C07c *103/00*
U.S. Cl. 260—561 N **2 Claims**

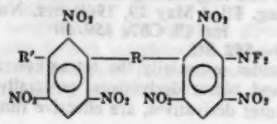
Copper may be removed or reduced from aqueous solutions of acrylamide by treating such solutions with a water-soluble salt of orthophosphoric acid.

3,776,958
NITRODIFLUORAMINOPOLYAROMATIC COMPOUNDS

Marion E. Hill, Palo Alto, and Michael W. Lerom, Menlo Park, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Apr. 18, 1972, Ser. No. 245,186
Int. Cl. C07c *87/00*
U.S. Cl. 260—576 **5 Claims**

Difluoraminonitropolyaromatic compounds corresponding to the formula



wherein R may be —CH=CH—, —CH_2—CH_2—, or 0 (zero), i.e., a direct ring carbon to ring carbon bond; and wherein R′ may be H or —NF_2 and methods of preparing same. The compounds are of high energy density suitable as explosives, for use in detonators or as plasticizers or otherwise as components in explosive and propellant compositions.

3,776,959
PREPARATION OF AMINE OXIDES IN NON-POLAR SOLVENT SYSTEMS

Joseph S. Stalioraitis and Charles S. Wilhelmy, Chicago, Ill., assignors to Akzona Incorporated, Asheville, N.C.

No Drawing. Continuation-in-part of application Ser. No. 686,805, Nov. 30, 1967, now Patent No. 3,558,710, dated Jan. 26, 1971. This application Jan. 25, 1971, Ser. No. 109,574
The portion of the term of the patent subsequent to Jan. 26, 1988, has been disclaimed
Int. Cl. C07c *85/00*
U.S. Cl. 260—583 D **6 Claims**

Substantially anhydrous amine oxides are prepared by reacting a tertiary amine with hydrogen peroxide in a non-polar solvent system and removing water from the reaction mass azeotropically.

3,776,960
PREPARATION OF BIS(PERFLUOROALKYLSULFONYL)METHANES

Robert J. Koshar, Lincoln Township, Washington County, and Ronald A. Mitsch, Little Canada, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Dec. 9, 1971, Ser. No. 206,518
Int. Cl. C07c *147/02*
U.S. Cl. 260—607 A **9 Claims**

A process is provided for obtaining improved yields of bis(perfluoroalkylsulfonyl)methanes by the reaction of perfluoroalkanesulfonyl fluorides with methylmagnesium halide using a non-reactive ether forming an oxonium ion in aqueous sulfuric acid having an ionization constant as expressed by pKa of greater than —3.3.

3,776,961
3-SUBSTITUTED 4-NITROPHENYL HALOPHENYL ETHERS

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 819,411, Apr. 25, 1969. This application Dec. 23, 1971, Ser. No. 211,787
Int. Cl. C07c *43/22*
U.S. Cl. 260—613 R **3 Claims**

4-nitrophenyl halophenyl ethers having a substituent in the 3-position comprise an effective class of pre- and post-emergence herbicides.

3,776,962
PROCESS FOR THE MANUFACTURE OF AROMATIC SUBSTITUTED ALKANES

Husni R. Alul and Gilbert J. McEwan, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

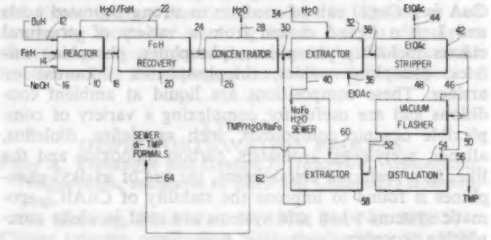
No Drawing. Filed May 26, 1966, Ser. No. 553,030
Int. Cl. C07c *39/06*
U.S. Cl. 260—624 C **10 Claims**

Alkyl aromatic products containing higher percentages of compounds in which the aromatic substituent occupies the 2 or 3 position on the alkyl chain are prepared by reaction of olefins and aromatics in the presence of an amount of hydrogen fluoride catalyst insufficient to form a separate catalyst phase. The sulfonates of such products have high solubility and are useful as surfactants in detergent formulations.

3,776,963
TRIMETHYLOLPROPANE RECOVERY

Edward Gustave Zey and Robert Frank Stubbeman, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

Filed Mar. 16, 1971, Ser. No. 124,687
Int. Cl. C07c *29/24, 31/18*
U.S. Cl. 260—637 P **5 Claims**



In a process for the manufacture of trimethylolpropane in which a major proportion of the trimethylolpropane is first separated from the reaction mixture, the improvement which comprises recovering additional trimethylolpropane from the reaction mixture residue of said first separation step.

3,776,964
ORGANOLITHIUM POLYMERIZATION INITIATORS

Robert C. Morrison and Conrad W. Kamienski, Gastonia, N.C., assignors to First National City Bank, New York, N.Y.

No Drawing. Filed Mar. 18, 1971. Ser. No. 125,793
Int. Cl. C07f *1/02*
U.S. Cl. 260—665 R **24 Claims**

Polymerization initiators comprising alkyllithium adduct-metalates of conjugated dienes and vinyl-substituted aromatic compounds. Such initiator compositions are highly effective for the production of polymers of conjugated dienes and/or vinyl-substituted aromatic compounds.

3,776,965
SELECTIVE CONVERSION OF DIETHYLCYCLOHEXANES TO GEM-STRUCTURED TETRAMETHYLCYCLOHEXANES

Henri Robert Debus, Meise, Marcel Van Tongelen, Diegem, and Raymond M. Cahen, St. Pierre, Belgium, and Calvin Lee Daniels, Big Spring, Tex., assignors to Labofina S.A., Brussels, Belgium, and Cosden Oil & Chemical Company, Big Spring, Tex.

No Drawing. Filed May 10, 1972, Ser. No. 251,883
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 R **13 Claims**

Gem-polymethylcyclohexanes are produced by a process of contacting certain alkylcyclohexanes under anhydrous conditions with a Friedel-Crafts catalyst and an effective amount of a promoter for the catalyst selected from hydrogen halide, alkyl halides, olefins and mixtures thereof at temperatures in the range of 0 to 70° C. The contact time is generally from 0.1 to about 10 hours.

3,776,966
CATALYTIC ISOMERIZATION PROCESS FOR THE PRODUCTION OF 5-ETHYLIDENEBICYCLO[2.2.1] HEPT-2-ENES

Wolfgang Schneider, Brecksville, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

No Drawing. Filed Oct. 30, 1972, Ser. No. 302,093
Int. Cl. C07c *5/28*
U.S. Cl. 260—666 PY **10 Claims**

5-vinylbicyclo[2.2.1]hept-2-ene is isomerized to 5-ethylidenebicyclo[2.2.1]hept-2-ene when contacted with a catalyst comprising a titanium compound such as titanium alcoholates and cyclopentadienyl titanium halides with a Group I–A, II–A, III–A of lanthanide metal in combination with a halide of iron, zinc, or zirconium. 5-ethylidenebicyclo[2.2.1]hept-2-ene is a useful comonomer for polymerization with α-olefins such as ethylene and propylene.

3,776,967
DEHYDROGENATION PROCESS

Herbert Riegel, Palisades Park, N.J., Harvey P. Schindler, New York, N.Y., Margan C. Sze, Upper Montclair, N.J., and Maurice E. Brooks, Great Neck, N.Y., assignors to The Lummus Company, Bloomfield, N.J.

No Drawing. Original application Oct. 23, 1968, Ser. No. 769,811, now Patent No. 3,637,895. Divided and this application Oct. 14, 1971, Ser. No. 189,390
Int. Cl. C07c *5/20*
U.S. Cl. 260—666 A **15 Claims**

Process for dehydrogenating a feed containing either an alkane, cycloalkane, mono-halo substituted derivative thereof or alkyl substituted aromatic hydrocarbon wherein the feed is contacted with a melt containing a multivalent metal halide in both its higher and lower valence state, such as a mixture of cupric and cuprous chloride. In accordance with a preferred embodiment, the melt is previously contacted with an oxygen containing gas to produce the corresponding oxyhalide of the metal, whereby the reaction may be effected on a continuous basis.

3,776,968
CATALYTIC CONVERSION OF POLYCYCLIC AROMATIC HYDROCARBONS IN THE PRESENCE OF HYDROGEN

Ronald D. Bushick, Glen Mills, and Alfred E. Hirschler, Springfield, Pa., assignors to Sun Oil Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 749,932, Aug. 5, 1968, now Patent No. 3,565,964, dated Feb. 23, 1971. Divided and this application Feb. 23, 1971, Ser. No. 118,177
Int. Cl. C07c *5/24, 15/28*
U.S. Cl. 260—668 F **14 Claims**

Polycyclic aromatic hydrocarbons (preferably containing at least three condensed rings) can be converted to other polycyclic hydrocarbons by a catalytic conversion process comprising contacting the hydrocarbon with an acidic alumino-silicate zeolite in the presence of from 5–5000 p.s.i. of hydrogen at an elevated temperature (e.g., at least 40° C., preferably 100–200° C.) for a period of time sufficient to allow the catalytic conversion to occur. For example, s-hydrindacene (s-HIN) can be converted to as-hydrindacene (as-HIN) by so contacting the s-HIN with a GdHY zeolite at 100–200° C. (e.g., 150° C.) in the presence of 15–250 p.s.i.g. of hydrogen at a weight hourly space velocity in the range of 0.1–20 (preferably 0.25–10).

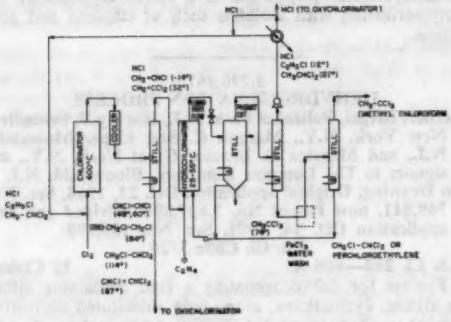
3,776,969
PRODUCTION OF METHYL CHLOROFORM FROM ETHYLENE AND CHLORINE

Walter Lobunez, Princeton, N.J., assignor to FMC Corporation, New York, N.Y.

Filed Dec. 18, 1969, Ser. No. 886,070
Int. Cl. C07c *17/00*
U.S. Cl. 260—668 R **7 Claims**

Methyl chloroform is made from ethylene and chlorine by introducing the ethylene into a hydrochlorinator containing a suspension of a hydrochlorination catalyst in an anhydrous carrier, most preferably 1,1,2-trichloroethane or perchloroethylene, together with a stream obtained from a high-temperature chlorinator, which contains the vinyl chloride, vinylidene chloride and HCl produced therein to obtain a mixture of ethyl chloride, 1,1-dichloroethane and methyl chloroform. After separation of the products, the ethyl chloride and 1,1-dichloroethane are

recirculated back to the chlorinator. The mixed products from the high-temperature chlorinator are preferably fractionated to remove higher boilers, in particular the



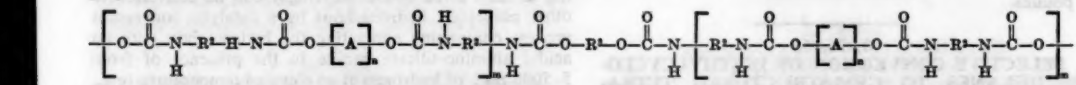
small amount of 1,2-dichloroethane (EDC) which is present, and which is extremely difficult to separate from methyl chloroform.

3,776,970
PROCESS FOR THE SEPARATION OF STYRENE FROM ETHYLBENZENE

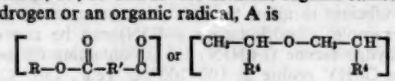
William F. Strazik, Wilbraham, Mass., and Eli Perry, St. Louis, Mo., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Dec. 14, 1972, Ser. No. 315,266
Int. Cl. C07c *7/02*
U.S. Cl. 260—669 A **6 Claims**

Styrene is separated from organic mixtures comprising styrene and ethylbenzene by contacting the mixture (feed mixture) against one side of a polyurethane elastomer membrane under pervaporation permeation conditions and withdrawing at the other side a vaporous mixture having increased styrene concentration. The polyurethane elastomer employed contains polyether or polyester groupings. Examples of polyurethane elastomer polymers are polymers of the formula



wherein R, R^1, R^2 and R^3 are divalent organic radicals, R^4 is hydrogen or an organic radical, A is



n is an integer in the range of 3–500 and *m* is an integer indicating the degree of polymerization.

3,776,971
PROCESS FOR PREPARING A MONOALKYL AROMATIC

Norman L. Carr, Allison Park, and Daniel Y. C. Ko, Pittsburgh, Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Aug. 13, 1971, Ser. No. 171,474
Int. Cl. C07c *3/52*
U.S. Cl. 260—671 P **12 Claims**

An improvement in a process wherein a first compound is converted to a second compound in an essentially irreversible reaction or to the second compound and to a third compound in essentially irreversible reactions and the second compound and the third compound are convertible to each other in equilibrium-limited reactions which involves introducing the third compound into the reaction zone in an amount greater than the amount that would be present at equilibrium and terminating the process before the reaction mixture reaches equilibrium.

3,776,972
LIGAND COMPLEXES OF Cu(I) SALTS

William E. Tyler III, Berkeley Heights, and Martin B. Dines, Mountainside, N.J., assignors to Esso Research and Engineering Company, Linden, N.J.

No Drawing. Filed June 2, 1972, Ser. No. 259,079
Int. Cl. C07c *11/24*
U.S. Cl. 260—677 A **9 Claims**

Novel compositions of matter herein are claimed and may be represented by the general formula CuA.L, where CuA is a Cu(I) salt of medium to strong Bronsted acids and L is a ligand chosen from a variety of structural classes including phosphines, phosphites, phosphine sulfides, phosphine oxides, thiophosphates, thioureas or arsines. These compositions are liquid at ambient conditions and are useful for complexing a variety of complexible organic compounds, such as olefins, diolefins, allenes, acetylenes, aromatics, carbon monoxide and the like. In a preferred embodiment, the use of trialkyl phosphines is found to improve the stability of $CuAlCl_4$-aromatic systems when said systems are used in olefin complexing processes.

3,776,973
OLEFIN CONVERSION USING COMPLEXES OF Mn, Tc, AND Re WITH ORGANOALUMINUM

Edmund T. Kittleman and Ernest A. Zuech, Bartlesville, Okla., assignors to Phillips Petroleum Company

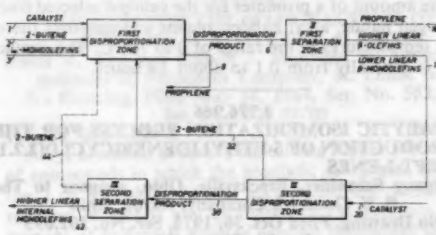
No Drawing. Continuation-in-part of abandoned application Ser. No. 75,800, Sept. 24, 1970, which is a division of application Ser. No. 717,026, Mar. 28, 1968, now Patent No. 3,558,515, which in turn is a continuation-in-part of abandoned application Ser. No. 635,669, May 3, 1967. This appplication June 23, 1971, Ser. No. 156,045
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **13 Claims**

A process for the conversion of internal olefinic hydrocarbons according to the olefin reaction (e.g., the olefin disproportionation reaction) and for the double bond isomerization of terminal olefinic hydrocarbons by contacting the olefinic hydrocarbon with a catalyst comprising a coordination complex of manganese, technetium, or rhenium, together with an organoaluminum adjuvant.

3,776,974
LINEAR MONOOLEFIN PRODUCTION

Pieter A. Gautier, Deer Park, Tex., and Franciscus J. F. van der Plas and Pieter A. Verbrugge, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Feb. 17, 1972, Ser. No. 227,193
Claims priority, application Great Britain, Feb. 22, 1971, 5,107/71
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D **4 Claims**



Linear α-olefins, of principally even carbon number, preferably produced by oligomerization of ethylene, are

converted to detergent range linear monoolefins of both even and odd carbon number by (1) disproportionating the linear α-olefins with 2-butene (2) separating of the resulting disporportionation product into a lower linear β-olefin fraction below the detergent range of carbon numbers and a higher linear β-olefin fraction within the detergent range of carbon numbers (3) recovering the higher linear β-olefin fraction as product (4) subjecting the lower β-olefin fraction to disproportionation to yield 2-butene and linear internal monoolefins and (5) separating and recovering from the resulting lower β-olefin disproportionation reaction mixture the normal internal monoolefin fraction within the detergent range of carbon numbers.

3,776,975

DISPROPORTIONATION PROCESS

Peter A. Verbrugge and Gerard J. Heiszwolf, Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed Mar. 16, 1972, Ser. No. 235,322
Claims priority, application Netherlands, Mar. 19, 1971, 7104210
Int. Cl. C07c *3/62*
U.S. Cl. 260—683 D 6 Claims

In the process for catalytic disproportionation of linear monoolefin reactant mixtures, each of which consists substantially of mixtures of olefins of internal double bond isomers, the disproportionation catalyst aging is substantially reduced by employing as one of the linear monoolefin reactant mixtures a mixture that contains at least 20% more β-olefins than would be present in the same mixture if isomerized to thermodynamic equilibrium. Also described is an improved process for the preparation of detergent range, C_{11}–C_{15} linear internal monoolefins which utilizes as an essential processing step the above-described catalystic disproportionation reaction procedure.

3,776,976

PROCESS FOR THE PRODUCTION OF POLYMERS CONTAINING N-SUBSTITUTED ACRYLIC ACID AMIDES AND/OR METHACRYLIC ACID AMIDES

Theodor Volker and Hanspeter Hugener, Freiburg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

No Drawing. Filed July 13, 1971, Ser. No. 162,292
Claims priority, application Switzerland, July 14, 1970, 10,652/70
Int. Cl. C08g *20/38*
U.S. Cl. 260—780 A 6 Claims

A process for the production of polymers containing N-substituted acrylic acid amides and/or methacrylic acid amides comprises reacting polyacrylic acid imide and/or polymethacrylic acid imide or polymers containing acrylic acid imide and/or methacrylic acid imide groups at a temperature of 0° C. to 120° C. with an amine of the formula RCH_2NH_2 in which R is H, alkyl, aryl, aralkyl, hydroxyalkyl or carboxyalkyl. The amide polymers are useful as flocculation and disperison agents.

3,776,977

METHOD OF CURING ORGANIC SILOXANE POLYMERS AND COPOLYMERS

Rajendra Nath Chadha, Farmingdale, N.Y., assignor to Stauffer Chemical Company, Adrian, Mich.

No Drawing. Continuation-in-part of application Ser. No. 37,409, May 11, 1970, which is a continuation of application Ser. No. 516,689, Dec. 27, 1965, both now abandoned. This application June 18, 1971, Ser. No. 154,594
Int. Cl. C08g *47/10, 45/16*
U.S. Cl. 260—825 10 Claims

A curable composition is discolsed which comprises a hydroxylated organopolysiloxane fluid and an organic polymer having one or more silyl groups connected thereto. Each silyl group contains one or more groups capable of reacting with the hydroxyl groups of the organopolysiloxane.

3,776,978

EPOXY RESINS CONTAINING PHENOLIC ACCELERATORS AND ORGANIC TITANATES

Mark Markovitz, 2173 Apple Tree Lane, Schenectady, N.Y. 12309

No Drawing. Continuation-in-part of abandoned application Ser. No. 69,481, Sept. 3, 1970. This application Jan. 7, 1972, Ser. No. 216,240
Int. Cl. C08g *45/08*
U.S. Cl. 260—831 24 Claims

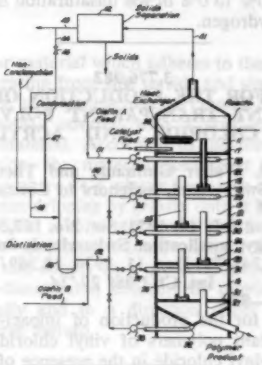
The cure rate of epoxy resins containing 1,2 epoxy groups and having more than one epoxide group per molecule can be controllably varied by the utilization of a hardener comprising a mixture of a phenol and an organic titanate containing only titanium-oxygen primary valence bonds wherein the phenol is present in quantities less than 15% by weight of the epoxy resin, and the organic titanate is present in quantities less than 10% by weight of the epoxy resin.

3,776,979

OLEFIN BLOCK COPOLYMER FLUIDIZED-BED POLYMERIZATION PROCESS

Robert William Hill, Leawood, Kans., assignor to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Nov. 5, 1971, Ser. No. 196,001
Int. Cl. C08f *15/00*
U.S. Cl. 260—878 B 9 Claims



Olefin block copolymers are prepared by a fluidized-bed polymerization process wherein a vaporous feed is passed upwardly through multiple reaction zones in intimate contact with downwardly flowing fluidized catalyst and polymer particles, olefin A being continuously introduced into an upper polymerization zone, olefin B being continuously introduced into a lower polymerization zone, and a A–B block copolymer product being continuously withdrawn from the lowest polymerization zone.

3,776,980

POLYESTERS OF METHYLCYCLOHEXENE-DICARBOXYLIC ANHYDRIDE

Frank Scardiglia, Woodcliff Lake, N.J., and Israel J. Dissen and Takeo Hokama, Chicago, Ill., assignors to Velsicol Chemical Corporation, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 33,501, Apr. 30, 1970, now Patent No. 3,663,658. This application Jan. 17, 1972, Ser. No. 218,471
The portion of the term of the patent subsequent to May 16, 1990, has been disclaimed
Int. Cl. C08f *21/00, 21/02;* C08g *17/12*
U.S. Cl. 260—872 9 Claims

This invention discloses new air-drying polyester compositions comprising the adduct of maleic acid or anhydride and trans-piperylene; isophthalic acid; an unsatu-

rated dicarboxylic compound selected from the group consisting of maleic acid, maleic anhydride and fumaric acid; and glycol.

3,776,981

HYDROFORMYLATED BLOCK COPOLYMERS

Hans J. S. Winkler, Berkeley, and Friedrich E. Neumann, Oakland, Calif., assignors to Shell Oil Company, Houston, Tex.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,463
Int. Cl. C08f *19/08, 27/00, 27/24*
U.S. Cl. 260—880 B 16 Claims

Novel hydroxylated block copolymers are made by reacting a precursor block copolymer with carbon monoxide and hydrogen. The precursor block copolymer has at least one mono alpha alkenyl arene polymer block and at least one conjugated diene polymer block having between 0% and about 30%, 1,2 or 3,4 microstructure, the balance being 1,4 structure. Alternatively, the 1,2 or 3,4 microstructure of the precursor polymer may be decreased or substantially removed by selective hydrogenation before hydroformylation. Hydroformylation of the block copolymer with about 1:1 to about 5:1 hydrogen-carbon monoxide mixture using a complex cobalt carbonyl trihydrocarbylphosphine catalyst produces mainly —CH_2OH substituents. In the hydroxylated polymers so produced, 10–100% of the olefinic unsaturation in the diene polymer block has been replaced with —CH_2OH groups and 90% to 0% of the unsaturation has been saturated with hydrogen.

3,776,982

PROCESS FOR THE PRODUCTION OF IMPACT RESISTANT TRANSPARENT POLYMERS OF VINYL CHLORIDE AND ACRYLIC ACID ESTER

Rene Nicolet, Walter Gutmann, and Theodor Volker, Freiburg, Switzerland, assignors to Lonza Ltd., Basel, Switzerland

Filed July 14, 1971, Ser. No. 162,346
Claims priority, application Switzerland, July 15, 1970, 10,743/70; Dec. 11, 1970, 18,369/70
Int. Cl. C08f *29/24*
U.S. Cl. 260—884 12 Claims

A process for the production of impact-resistant and weather-resistant polymers of vinyl chloride by polymerization of vinyl chloride in the presence of polymers of acrylic acid esters. The process comprises polymerizing vinyl chloride in the presence of 2–10% by weight of a polymer of 2-ethylhexylacrylate with at least 50% by weight of 2-ethylhexylacrylate so that the polymerization of the vinyl chloride conducted at temperatures of from 50–65° C. with mixing at the saturation pressure of the vinyl chloride in the presence of liquid vinyl chloride such that the conversion amounts to 70%. The maximum mean particle diameter and the minimum mean particle diameter of the polymer of 2-ethylhexylacrylate is related to the concentration of the polymer of 2-ethylhexylacrylate in the polymer of the vinyl chloride.

3,776,983

BLOCK POLYMERS DERIVED FROM VINYL QUATERNARY NITROGEN MONOMERS AND POLYALKYLENE OXIDE CONDENSATES

Carmine P. Iovine and Dilip K. Ray-Chaudhuri, Somerset, N.J., assignors to National Starch and Chemical Corporation, New York, N.Y.

No Drawing. Filed June 10, 1971, Ser. No. 151,985
Int. Cl. C08f *29/46*; C08g *33/14*
U.S. Cl. 260—901 7 Claims

Novel block copolymers of the A-B or A-B-A type are described wherein the A block is derived from a vinyl quaternary nitrogen monomer and the B block is derived from a polyalkylene oxide condensate. The novel copolymers are water-soluble or water-dispersible and are useful as electroconductive coatings in the manufacture of electrophotoconductive paper.

3,776,984

S-DICHLOROMETHYL OXYPHOSPHORUS THIOATES

Kenneth Wayne Ratts, Creve Coeur, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Oct. 4, 1971, Ser. No. 186,467
Int. Cl. C07f *9/16, 9/30, 9/38*
U.S. Cl. 260—943 12 Claims

S-dichloromethyl oxyphosphorus thioates are prepared from substituted dichloromethane sulfenyl chlorides by reaction with a tertiary oxyphosphorus compound. The compounds of this invention are pesticidally active and particularly useful as pre-emergent herbicides.

3,776,985

CONTINUOUS PRODUCTION OF PRIMARY AND SECONDARY PHOSPHATE ESTER ADMIXTURE

Louis J. Nehmsmann, Warren, and Leslie M. Schenck, Mountainside, N.J., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed May 26, 1971, Ser. No. 147,221
Int. Cl. C07f *9/02*
U.S. Cl. 260—980 7 Claims

This invention relates to the production of surface active compositions, and more particularly to an improved process for continuously preparing surface active compositions containing uniform mixtures of primary and secondary phosphate esters of organic hydroxyl compounds.

3,776,986

PREPARATION OF TETRAISOPROPYL THIOPEROXYDIPHOSPHATE

James Kalil, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed May 11, 1971, Ser. No. 142,385
Int. Cl. C07f *9/16*
U.S. Cl. 260—985 12 Claims

The preparation of tetraisopropyl thioperoxydiphosphate by (a) reacting one mole phosphorous pentasulfide with at least about 5 moles of isopropyl alcohol at a temperature of from about 20° C. to the reflux temperature of the reaction mixture; (b) adding at least about 0.85 mole of H_2O_2 per mole of phosphorus pentasulfide utilized to the reaction mixture of Step (a) and (c) isolating the reaction product.

This process is simple and economical and yields directly from the reaction mixture a product having a greatly lessened tendency to develop disagreeable odors.

3,776,987

PRODUCTION OF METAL-CONTAINING MATERIALS FROM SOLS

John Herbert Grimes, Basingstoke, and Edward Sydney Lane, Didcot, England (both % United Kingdom Atomic Energy Authority, 11, Charles II St., London, SW. 1, England)

No Drawing. Continuation of abandoned application Ser. No. 747,800, July 26, 1968. This application May 19, 1971, Ser. No. 145,018
Int. Cl. B01j *13/00*; G21c *21/00*
U.S. Cl. 264—.5 17 Claims

To a hydrous metal oxide sol of the relevant metal or metals (e.g., uranium, aluminum, zirconium, iron, titanium) is added a non-cellulosic, non-dehydrating organic polymer soluble in the hydrous sol and selected from the group consisting of polyhydroxy, polycarboxylic and polyamine polymers which form a complex with said hydrous metal oxide, said organic polymer being capable of increasing the viscosity of the sol. The sol is formed into entities of a selected physical configuration, e.g. drops, and the entities treated with an agent capable of

precipitating the metal oxide, e.g., a base such as ammonia, to convert them to a gel, e.g., of discrete spheres, containing the metal. The organic compound can be driven off by heating.

3,776,988

CRYOCHEMICAL METHOD FOR FORMING SPHERICAL METAL OXIDE PARTICLES FROM METAL SALT SOLUTIONS

Marvin C. Tinkle, Los Alamos, N. Mex., assignor to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Aug. 13, 1971, Ser. No. 171,745
Int. Cl. B01j *2/06*
U.S. Cl. 264—14 **1 Claim**

A method of preparing small metal oxide spheres cryochemically utilizing metal salts (e.g., nitrates) that cannot readily be dried and calcined without loss of sphericity of the particles. Such metal salts are cryochemically formed into small spheres, partially or completely converted to an insoluble salt, and dried and calcined.

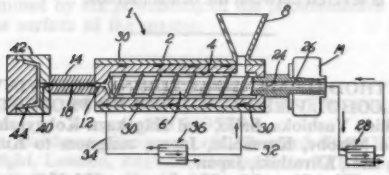
3,776,989

METHOD FOR INJECTION MOLDING ARTICLES OF FOAM MATERIAL INVOLVING AUTOGENOUS FLOW

Rupert E. Annis, Jr., Salem, and William T. Kyritsis, Beverly Farms, Mass., assignors to USM Corporation, Boston, Mass.

Continuation-in-part of application Ser. No. 886,485, Dec. 19, 1969, which is a continuation-in-part of application Ser. No. 644,886, June 9, 1967, both now abandoned. This application May 8, 1972, Ser. No. 250,932
Int. Cl. B29b *3/00*; B29d *27/00*; B29f *1/08*
U.S. Cl. 264—53 **7 Claims**

A process of molding articles of foam material comprising forming a mixture of organic polymeric resin material and a blowing agent in a chamber at a temperature below the foaming temperature of the resin-blowing agent system and forcing the mixture through a restriction for resisting the flow of the material to impart heat to the material, the heat imparted being of a magnitude sufficient to raise the temperature of the mixture to the foaming temperature, and discharging the mixture, at its foaming temperature, into a mold cavity.



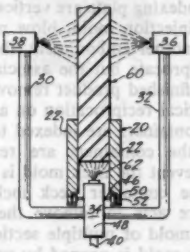
3,776,990

METHOD OF FORMING SOLID STRUCTURES FROM A CONTINUOUSLY SUPPLIED LIQUID

Ernest R. Watkins, Jr., P.O. Box 12091, Atlanta, Ga. 30305, and David W. Browne, P.O. Box 444, Snellville, Ga. 30278

Continuation of abandoned application Ser. No. 817,317, Apr. 18, 1969. This application Nov. 22, 1971, Ser. No. 200,812
Int. Cl. B28b *1/32*
U.S. Cl. 264—54 **10 Claims**

A continuously moving foam spray nozzle which supplies liquid plastic such as polyurethane moves in a path to define and create a solid structure which solidifies immediately as the noozle moves away and the result can be a curved solid building structure similar to a conventional "Quonset hut" made from solid plastic or can be wall structures of different shapes. The foaming spray nozzle is carried on a guide frame which moves along a predetermined track and in the case of curved structures like a "Quonset hut" the foam nozzle moves in an arch from one side to the other and at the same time is moving lineally on the track to create a continuous curved shell of whatever length is desired. (Nozzles may be mounted facing each other in opposition to coat a shell formed there between by the foam which is applied from other means.) In another form, simultaneously with the creation of the plastic structure a covering of sheet plastic or other similar material is supplied from rolls carried with the nozzle, whereby the exterior surfaces both outside and inside may be simultaneously covered with sheet plastic or other similar material which adheres to the foam. With the nozzle operating from side to side and simultaneously moving lineally, wall panels may be created continuously and simultaneously covered with a skin of plastic or other similar material. According to the method of the present invention, the material used must be self-supporting in atmosphere (e.g. plastic foam) so as to remain in place and resist dripping by gravity until it has solidified sufficiently to form a solid structure. The method is that of continuously supplying a foam material and continuously moving said supply in a pre-determined pattern to create a three-dimensional structure by moving said supply both lineally and in a direction either straight or curved transverse thereto.

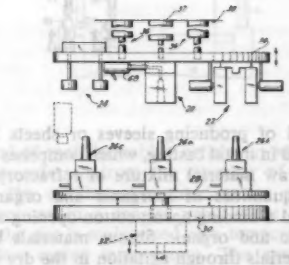


3,776,991

INJECTION BLOW MOLDING METHOD

Paul Marcus, 85 Pascack Road, Pearl River, N.Y. 10965

Filed June 30, 1971, Ser. No. 158,161
Int. Cl. B29c *17/07*; B29d *23/02*
U.S. Cl. 264—89 **8 Claims**



An injection blow molding method utilizing a rotary indexing plate on which core rod assemblies are mounted for indexing, in a rotary path, through at least three stations. The first station is an injection station at which a

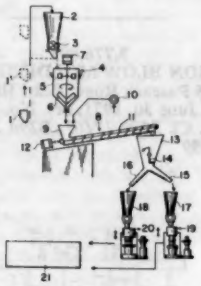
plastic parison or preform is injected around the core rod and within a neck mold. The second station is a blow station at which air passes through the core rod into the parison thereby inflating it and forcing it against the surface of the selected blow mold cavity. The third station is an ejection station at which the finished plastic container is removed from the core rod and neck mold. In some applications there are four stations. The fourth station could be used to preheat or precool the core rods preparing them for the start of the ejection cycle. The fourth station in a suggested embodiment could be deployed for preparing for orientation the plastic parison by temperature control; and, thereafter, orientation takes place prior to blowing. Obviously the three and four station machine can be modulated to present a six and eight station machine respectively. In one embodiment, the core rods and supporting indexing plate are vertically reciprocal into and out of the injection mold, blow mold and removal mechanism. In another embodiment, the core rod assemblies do not reciprocate but the associated injection and blow molds and finished product removal mechanism are mounted for vertical reciprocation on a clamp plate. The blown finished containers are indexed to the ejection station at which the containers are removed from the machine. In the event the neck mold is of one-piece construction and the container neck includes threads, an unscrewing device acts to remove the bottle from the mold. If a neck mold of multiple section construction is utilized, the neck mold is opened by suitable mechanical means.

3,776,992

METHOD FOR PRODUCING SLEEVES OR SHEETS FOR FEEDER HEADS FORMED IN METAL CASTING AND AN APPARATUS THEREFOR

Masamitsu Miki, 25-15, 1-chome, Nakahara, Mitaka, Tokyo, Japan

Filed Mar. 31, 1971, Ser. No. 129,778
Claims priority, application Japan, Sept. 7, 1970, 45/77,948, 45/77,949
Int. Cl. F27d *1/16*
U.S. Cl. 264—122 **7 Claims**



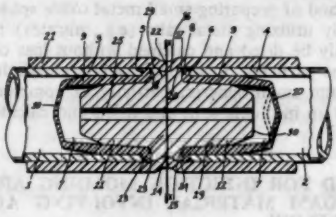
A method of producing sleeves or sheets for feeder heads formed in metal casting, which comprises optionally blending a raw material mixture of refractory materials with large quantities of inorganic and organic fibrous materials and a binding agent; cotton-opening and mixing the inorganic and organic fibrous materials blended in the raw materials through agitation in the dry state without adding water; kneading the resultant mixture with less than 150% by weight of water so as to hold the mixture in the solid form with minimal fluidity; molding the kneaded mixture into a desired shape by pressing in molds; and drying to solidify the molded mixture at a temperature of about 180° C.

3,776,993

METHOD OF MANUFACTURING TUBULAR ARTICLES

Wilhelm Lachenmayer, Berlebeck, Germany, assignor to Benteler-Werke AG, Schloss Neuhaus, Germany

Original application Oct. 10, 1969, Ser. No. 865,283, now Patent No. 3,661,184, dated May 9, 1972. Divided and this application Feb. 14, 1972, Ser. No. 225,878
Claims priority, application Germany, Nov. 26, 1968, P 18 10 957.4
Int. Cl. B28b *21/58, 21/72*
U.S. Cl. 264—159 **9 Claims**



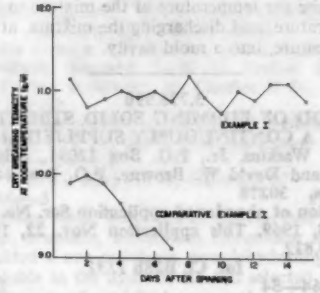
A method of manufacturing tubular articles wherein the open ends of a pair of elongated tubular members are closed by corrosion resistant inserts having flange portions overlying the radial end faces of the tubular members. The members are then aligned and surrounded by an insulating jacket provided with radially inwardly extending circumferential beads which abut against and are sealed to the respective flange portions of the inserts so as to fixedly secure the latter in the open ends, whereafter the jacket is severed between the beads thereof.

3,776,994

METHOD OF MANUFACTURING POLYVINYL ALCOHOL FIBER OF IMPROVED PROPERTY

Yoshihide Yoshioka, Saijo, and Shigekazu Kobayashi and Akio Mizobe, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Nov. 26, 1971, Ser. No. 202,384
Claims priority, application Japan, Nov. 27, 1970, 45/105,374
Int. Cl. D01d *1/10*
U.S. Cl. 264—170 **13 Claims**



The properties of polyvinyl alcohol fibers are improved by spinning polyvinyl alcohol containing boric acid or a borate into an alkaline spinning bath containing a conventional dehydrating salt and an additive comprising 4×10^{-5}

to 9×10^{-2} mol/l. of (a) an aminopolycarboxylic acid, or (b) a condensed phosphoric acid, or (c) a salt, e.g., sodium or potassium or ammonium salts of (a) or (b).

3,776,995

METHOD OF PRODUCING X-RAY DIFFRACTION GRATING

William S. Little, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 15, 1970, Ser. No. 80,865
The portion of the term of the patent subsequent to Mar. 21, 1989, has been disclaimed
Int. Cl. B29c *1/02*
U.S. Cl. 264—219 1 Claim

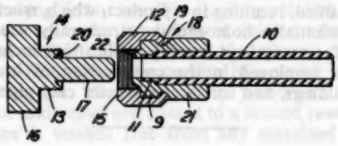
A method is herein disclosed for producing a high resolution X-ray diffraction grating having a relatively large working surface thereon. An optically worked glass substrate is coated with an even layer of photoresist material. The coated surface is then exposed to a pattern of light interference fringes and the pattern is scanned across the surface in a manner whereby the phase relationship between the interfering light beams remain unaltered at each point on the surface. The rate of scan is controlled to produce a uniform time average exposure of the fringes on the coated surface. The exposed surface is then developed by slectively removing the photoresist material from the glass support surface leaving behind a periodic array of extended parallel glass stripes separated by ridges of photosensitive material. The developed surface is next coated with a thin layer of glass adhering metal to form an inverse X-ray grating. A substrate coated with an unfixed epoxy resin is placed in pressure contact against the metallized surface of the work element and allowed to dry or harden while under pressure. The substrate is then removed from the master and forms an X-ray diffraction grating having a smooth unblemished surface thereon interrupted by equally spaced grooves that are determined by the positioning of the photosensitive ridges on the surface of the master.

3,776,996

METHODS OF PROVIDING END FITTINGS ON HOSES

James Brisbane Cameron and Bernard Piet Walton-Knight, London, England, asssignors to BTR Industries Limited, London, England

Filed Aug. 12, 1971, Ser. No. 171,245
Claims priority, application Great Britain, Aug. 13, 1970, 39,091/70
Int. Cl. B32b *1/10*
U.S. Cl. 264—242 2 Claims



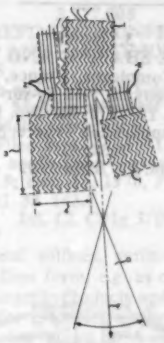
A method of providing an end fitting in the end portion of a hose, by forming a mould around the hose end portion, so that the end portion is a part of the mould, and then injecting a hardenable material into the mould so that the moulded part is moulded to the end portion. The bore of the hose may be closed by a removable plug prior to the moulding. An end fitting nut may be positioned around the end portion to form a part of the mould, and the nut may be threaded on the plug; prior to the plug being used to close the bore of the hose.

3,776,997

PROCESS FOR THE PREPARATION OF STRETCH RESISTANT POLYPIVALOLACTONE FIBERS

Shee Lup Jung and Lawrence Forwood Beste, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1966, Ser. No. 599,178
Int. Cl. B29c *17/02*
U.S. Cl. 264—290 1 Claim



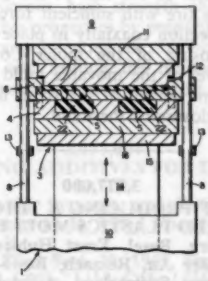
Polypivalolactone fibers with high resistance to stretch after boil-off are prepared by a critical combination of drawing and heating steps performed upon oriented polypivalolactone fibers. These fibers are characterized by their unique structural form, most significantly the relative amounts of the polymer which exist in the two crystalline forms: α and β.

3,776,998

METHOD OF MOLDING RUBBER ARTICLES

Herman S. Church, Cuyahoga, Ohio, assignor to Teledyne Mid-American Corporation, Hartville, Ohio

Filed Feb. 10, 1972, Ser. No. 225,065
Int. Cl. B29g *3/00*
U.S. Cl. 264—294 8 Claims



A method of molding rubber articles in which uncured rubber is transferred from the chamber of a pot sprue plate into the cavities of a mold cavity plate by pot plunger pressure in a master press while the uncured rubber in the pot is maintained at a temperature considerably below curing temperature. The sprue plate retained by the master press is separated from the cavity plate, and the cavity plate then is removed from the master press. A mold lid with cavity pressure pads then is placed on the cavity plate with the cavities filled with uncured rubber. The mold lid and cavity plate as a mold unit is pressed in an auxiliary press to cure the rubber

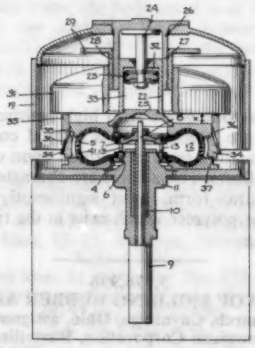
under pressure for the necessary time interval at the required curing temperature. The master press may serve a number of auxiliary presses. Fresh uncured rubber is added to the chamber of the master press sprue plate which is maintained at a temperature considerably below curing temperature, before each new cavity plate for a mold unit for one of the auxiliary presses is injected with uncured rubber. The procedure eliminates forming substantially any cured rubber scrap in producing molded articles.

3,776,999

METHOD OF TIRE SHAPING AND VULCANIZING

Jean R. Leblond, Compiegne, France, assignor to Uniroyal Societe Anonyme, Neuilly-sur-Seine, France

Filed Sept. 15, 1971, Ser. No. 180,591
Claims priority, application France, Sept. 21, 1970, 7034111
Int. Cl. B29n *5/02*
U.S. Cl. 264—315 **6 Claims**



Improvements in a tire shaping and vulcanizing method to enable use of a press with tread molding segments avoiding distortion of the tire. A movable mold section is applied to the tire with sufficient force to position the movable mold section coaxially in place on the tire prior to complete closure of the mold. Compressible stops restrain the travel of the movable mold section to maintain space for movement of the tread molding segments until complete closure of the mold.

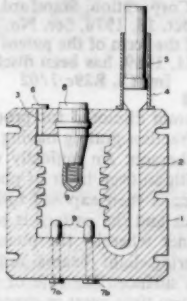
3,777,000

METHOD OF PRODUCING A THICK-WALLED CURED PLASTICS MOULDING

Eugen Kusenberg, Basel, Ernst Hubler, Aesch, Hans-Rudolf Aus der Au, Reinach, Basel-Land, and Otto Ernst, Pfeffingen, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Continuation of application Ser. No. 45,123, June 10, 1970. This application July 19, 1972, Ser. No. 273,171
Claims priority, application Switzerland, June 19, 1969, 9,385/69
Int. Cl. B29g *7/00*
U.S. Cl. 264—327 **5 Claims**

Thick-walled, cured plastics mouldings are produced by pouring a preheated, highly reactive liquid casting resin composition, which is capable of setting within a period of three to sixty minutes, such as an epoxide resin composition, into a preheated mould substantially without the application of pressure so as substantially to fill the mould, the temperature of the mould being sufficient to initiate curing of the resin composition and the temperature of the composition being at least 10% below the temperature of the mould, said temperatures being measured in degrees centigrade; further composition is supplied to the mould with the application of gentle pressure to compensate for shrinkage until the composition has set, whereafter the set moulding can be removed from the mould. The specified temperature difference between the mould and the composition ensure that relatively minor temperature gradients arise and enables good quality mouldings of any desired size to be made.



3,777,001

METHOD FOR THE PRODUCTION OF STRUCTURAL BODIES

Robert S. Clark, 1428 E. 3rd Place, Mesa, Ariz. 85203

No Drawing. Continuation-in-part of application Ser. No. 36,459, May 11, 1970. This application July 13, 1971, Ser. No. 162,268
Int. Cl. B29c *1/02*
U.S. Cl. 264—337 **8 Claims**

A method for producing structural bodies wherein unground but crushed clay pieces are introduced into a mold having a configuration related to the desired shape of the body to be produced. The mold in contact with the clay pieces is formed of solid graphite, which will not melt or otherwise deteriorate under the conditions prevailing during treatment and which will not adhere to or become embedded in the body being produced. The mold and clay particles present therein are heated to a temperature between about 1800° F. and 2500° F. Evidence indicates a solid reaction wherein the clay pieces have been densified, resulting in a product, which, when cooled, is a substantially homogenous, structurally sound body suitable for many load bearing applications including use as panels employed in the construction of homes and other buildings, and for large diameter clay pipe.

3,777,002

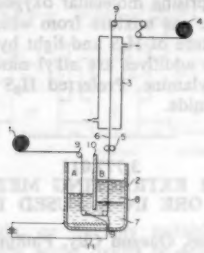
METHOD FOR MODIFYING THE SURFACE OF A POLYOLEFIN FILM

Toshio Suzuki, Koichi Awano, and Katsuhisa Ogino, Tokyo, Japan, assignors to Nisshin Boseki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 26, 1971, Ser. No. 109,884
Claims priority, application Japan, Feb. 2, 1970, 45/8,435
Int. Cl. B29c *25/00*; B44d *5/02*
U.S. Cl. 264—343 **3 Claims**

This invention relates to a method for modifying the surface of a polyolefin film by heating said film in a therm-

al medium and then contacting said film with a treating liquid. The thermal medium is selected from various kinds of inert liquids which do not react with the polyolefin film



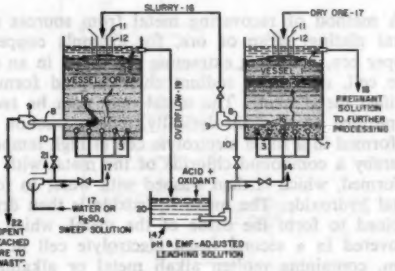
and the treating liquid is selected from various kinds of organic compounds which may contain or do not contain a high molecular substance other than the polyolefin of the film.

3,777,003

CONTINUOUS VAT LEACHING PROCESS

Adolph V. Mitterer, Lakewood, Colo., assignor to Continental Oil Company, Ponca City, Okla.

Filed Sept. 1, 1970, Ser. No. 68,690
Int. Cl. B01d *11/00;* **C01g** *43/00*
U.S. Cl. 423—20 **6 Claims**



The present invention relates to a method for leaching a mineral from an ore containing said mineral wherein a leaching solution is passed upwardly through a downwardly flowing bed or ore. The leaching solution is passed through the ore under conditions of quiescent flow whereby the mineral is dissolved from the mineral ore and is withdrawn from the upper portion of a vessel containing said bed or ore. The spent ore is withdrawn from the bottom of said vessel and passed to a second vessel wherein the ore is washed free from any entrained leaching solution.

3,777,004

PROCESS FOR HEAP LEACHING ORES

Arthur W. Lankenau and James L. Lake, Lakewood, Colo., assignors to Hazen Research, Inc., Golden, Colo.

No Drawing. Filed May 10, 1971, Ser. No. 141,960
Int. Cl. B01d *11/00;* **C01g** *43/00*
U.S. Cl. 423—20 **26 Claims**

A method for recovering metal values from large deposits of low grade ores or from high grade ores existing in small ore bodies in an outdoor operation near the mine which comprises making a pile of the ore and successively leaching selected depths of the ore from the top of the pile down by adding leaching agent and sufficient moisture to leach the metal contained in each selected depth with intermittent stirring of the selected depth of ore until the metal is solubilized followed by removal of the leached section from the pile, separation of the leach solution and solid tailings and recovery of the dissolved metal values from the leach solution.

3,777,005

METHOD OF REFINING NONFERROUS SULFIDE, ARSENIDE AND ANTIMONIDE MINERAL SUBSTANCES

Johannes Gerlach and Eberhard Gock, Berlin, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Sept. 27, 1971, Ser. No. 184,228
Claims priority, application Germany, Sept. 28, 1970, P 20 47 609.9; Dec. 15, 1970, P 20 61 652.8; July 30, 1971, P 21 38 143.1
Int. Cl. C01g *3/00*
U.S. Cl. 423—27 **13 Claims**

Nonferrous metal sulfides, antimonides and arsenides in mineral crystalline form, e.g. as ore, concentrates and metallurgical tailings, byproducts and waste materials, are comminuted, in for example, a vibrating mill by impact techniques (vibrating impact mill) until the X-ray diffraction or interference intensity is reduced, e.g. to a ratio of comminuted intensity to original intensity of less than 0.8. The comminuted product is then treated in a single step with oxygen and a lixiviant for recovery of the nonferrous metal or a salt thereof. The latter is found in solution in the aqueous phase.

3,777,006

PROCESS FOR PREPARING ZEOLITIC BODIES HAVING HIGH STRENGTH CHARACTERISTICS

Clark A. Rundell, Silver Spring, and Carl V. McDaniel, Laurel, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 868,568, Oct. 22, 1969. This application Jan. 21, 1972, Ser. No. 219,837
Int. Cl. C10b *33/28;* **B01j** *11/40*
U.S. Cl. 423—118 **2 Claims**

A process for preparing zeolitic bodies having a size in excess of 200 microns, high strength characteristics and excellent adsorptive properties by preparing clay bodies in the desired size range, treating the clay bodies in a sodium silicate solution and heating the formed bodies in the solution until crystallization is complete.

3,777,007

ANTI-CAKING ADDITIVES FOR INORGANIC SALTS

Lawrence P. Gould, Syracuse, and Robert J. Hoffman, Clay, N.Y., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Sept. 29, 1969, Ser. No. 862,028
Int. Cl. C01b *21/50;* **C01c** *1/16, 1/26*
U.S. Cl. 423—268 **14 Claims**

Mono- and di-saccharides in a finely divided state of about 200 mesh size and in very small amounts of the order of 0.05 to 0.50 weight percent, are effective anti-caking agents when mixed with inorganic salts which are prone to caking. Inorganic salts such as sodium nitrite, ammonium bicarbonate and ammonium chloride, to which is added this minute quantity of a saccharide such as sucrose, lactose, maltose, dextrose, fructose, mannose and arabinose, remain free-flowing after prolonged storage at elevated temperatures. When dissolved in water, these compositions yield clear solutions having no sediment, no floating scum or foam.

3,777,008

SOLID POLYPHOSPHORIC ACID

Peter John McIver, Rossland, British Columbia, Canada, assignor to Cominco Ltd., Montreal, Quebec, Canada

Filed Nov. 3, 1969, Ser. No. 873,363
Claims priority, application Canada, Sept. 24, 1969, 63,026
Int. Cl. C01b 25/16, 15/16
U.S. Cl. 423—316 12 Claims

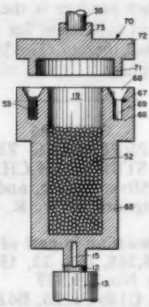
A process for producing a solid completely water-soluble polyphosphoric acid. Wet process phosphoric acid containing a cationic material—a term defined in the disclosure—is passed through an electrothermal cell at an elevated temperature. The concentrated acid is withdrawn from the cell and cooled to yield the desired product. The polyphosphoric acid produced by the process is described. An electrothermal cell in which the process may be carried out is described.

3,777,009

METHOD FOR DIRECT MELT SYNTHESIS OF INTERMETALLIC COMPOUNDS

Wilson P. Menashi, Lexington, Joseph F. Wenckus, Needham, and Roger A. Castonguay, Salem, Mass., assignors to Arthur D. Litttle, Inc., Cambridge, Mass.

Filed Aug. 5, 1971, Ser. No. 169,315
Int. Cl. C01b 19/00; C22c 7/00
U.S. Cl. 423—508 16 Claims



Method and apparatus for the melt synthesis of Group III–V, mixed III–V, II–VI, II–IV–VI and II–III–V compounds, at least one of the components forming the compounds being highly volatile under the conditions of synthesis. The metal components are placed in a reaction vessel which is sealed by a liquid selant in combination with a mechanical seal prior to heating the reactants to a temperature at which one or more of the reactants develops an appreciable vapor pressure. The atmosphere surrounding the reaction vessel is pressurized to a pressure above the maximum vapor pressure developed by the reactants during the melt synthesis which is accomplished by heating the reactants. The combination of mechanical and liquid seal is of a character to permit diffusion by high-pressure gas through it.

3,777,010

H_2S REMOVAL

Stephen W. Nicksic, Brea, and Shigeto Suzuki, San Francisco, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Filed June 21, 1971, Ser. No. 155,341
Int. Cl. C01b 17/04
U.S. Cl. 423—573 6 Claims

A process for removing H_2S from a gas mixture containing H_2S and for the production of sulfur which process comprises contacting the gas mixture with a solution, prepared by mixing 100 parts of an H_2S solvent with 0.05 to 5.0 parts of an amine, to absorb H_2S from the gas mixture, and oxidizing H_2S absorbed in the solution to sulfur by contacting the solution containing H_2S with a gas comprising molecular oxygen.

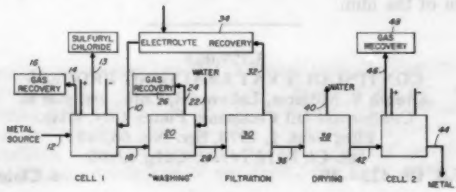
Preferably the gas mixture from which the H_2S is removed is a mixture of H_2S and light hydrocarbon gases. Preferred amine additives are alkyl nitrogen compounds such as dimethylamine. Preferred H_2S solvents include dimethyl formamide.

3,777,011

PROCESS FOR EXTRACTING METAL PLATING, SCRAP OR ORE IN A FUSED ELECTROLYTE CELL

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder -und Patentanstalt, Vaduz, Liechtenstein

Filed Oct. 2, 1970, Ser. No. 77,537
Int. Cl. C23b 5/00; C01g 1/02, 1/04
U.S. Cl. 423—592 4 Claims



A method of recovering metal from sources such as metal plating, scrap or ore, for example copper from copper ore, including extracting the metal in an electrolytic cell, containing sodium chloride, and forming the purified metal oxide. The metal may then be recovered in purified form electrolytically. The extraction step is performed in a fused electrolyte cell at high temperature, whereby a compound chloride of the metal with sodium is formed, which is then washed with water to form the metal hydroxide. The metal hydroxide is then dried and calcined to form the oxide of the metal, which can be recovered in a second fused electrolyte cell in purified form, containing molten alkali metal or alkaline earth halides and the metal fluoride, or by any suitable conventional method of reducing metal oxides to pure metal.

3,777,012

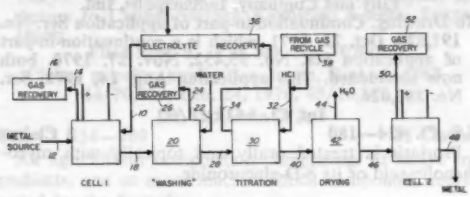
PROCESS FOR EXTRACTING METAL FROM METAL PLATING, SCRAP OR ORE IN A FUSED ELECTROLYTE CELL

Alberto E. Veloso, Quezon City, Philippines, assignor to Internationale Erfinder -und Patentanstalt, Vaduz, Liechtenstein

Filed Oct. 2, 1970, Ser. No. 77,536
Int. Cl. C01g 1/04; C23b 5/00, 5/32
U.S. Cl. 423—610 5 Claims

A method of recovering metal from sources such as metal plating, scrap or ore, for example tin from tin plate or tin cans, including extracting the metal in an electrolytic cell, containing sodium chloride, and forming a solution of the metal hydroxide. The metal may then be recovered in the purified metal oxide. The extraction step is performed in a fused electrolyte cell at high temperature, whereby a temporary alloy of the metal with sodium is formed, which is then washed with water and titrated to form the metal hydroxide. The metal hydroxide is then dried and calcined to form the oxide of the metal, which can be recovered in a

second fused electrolyte cell in purified form, containing molten alkali metal or alkaline earth halides and



the metal fluoride, or by any suitable conventional method of reducing metal oxides to pure metal.

3,777,013

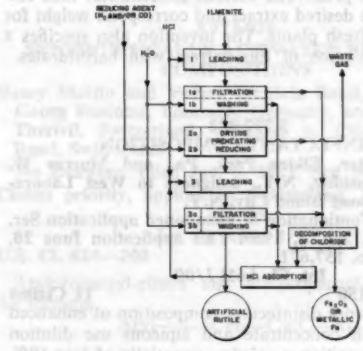
PROCESS FOR THE PREPARATION OF SYNTHETIC RUTILE STARTING FROM ILMENITE

Arrigo Soverini, Giuseppe Sironi, and Raffaele Arezzi, Novara, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

Filed May 12, 1971, Ser. No. 142,517

Claims priority, application Italy, May 13, 1970, 24,547/70

Int. Cl. C01g *23/04;* C22b *3/00, 53/00*
U.S. Cl. 423—610 **3 Claims**



A process is disclosed for the preparation of synthetic rutile starting from ilmenite, characterized in that it comprises a pre-leaching of the ilmenite with hydrochloric acid, followed by a reduction of the pre-leached product to convert to ferrous oxide the higher iron oxides therein, and a second leaching with hydrochloric acid.

3,777,014

METHOD AND REAGENTS FOR THE DIAGNOSIS OF VIRAL DISEASES

Joseph Zichis, Chicago, Ill., assignor to Beckman Instruments, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 786,770, Dec. 24, 1968. This application Feb. 2, 1971, Ser. No. 112,039

Int. Cl. G01n *31/00, 33/16*
U.S. Cl. 424—12 **3 Claims**

Erythrocytes derived from certain animal or fowl blood are specially treated to produce a substance which is readily agglutinable by viruses and by certain types of antibodies. The substance possesses properties of stability, sensitivity and agglutinability which are utilized in a serological diagnostic test for viral diseases.

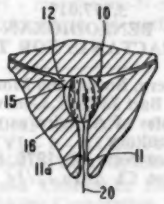
3,777,015

DEVICE FOR SUPPRESSING FERTILITY

Alejandro Zaffaroni, Atherton, Calif., assignor to Alza Corporation

Original application Jan. 19, 1970, Ser. No. 3,852, now Patent No. 3,699,951. Divided and this application Aug. 16, 1972, Ser. No. 281,148

Int. Cl. A61f *5/46;* A61m *7/00*
U.S. Cl. 424—15 **7 Claims**



Fertility suppression in a female mammal is achieved with a device for insertion and retention in the uterus in the form of a flexible, resilient body of polymeric material having an elastic memory. The body has an ellipsoidal shape and a fluted surface. When inserted into the uterine cavity in a compacted state, the body assumes an ellipsoidal configuration. Preferably, the device contains a progestational anti-fertility agent, most preferably progesterone, and is permeable to passage of the progestational anti-fertility agent at a low rate. Upon insertion in the uterus, the device releases a fertility suppressing amount of the progestational anti-fertility agent to the uterus.

3,777,016

COMPOSITION AND METHOD FOR THE TREATMENT OF DAMAGED SKIN

Joseph G. Gilbert, 75 Barberry Lane, Roslyn Heights, N.Y. 11577

No Drawing. Continuation of abandoned application Ser. No. 737,113, June 14, 1968, which is a continuation-in-part of application Ser. No. 679,365, Oct. 31, 1967, now Patent No. 3,525,340. This application Mar. 12, 1971, Ser. No. 123,809

Int. Cl. A61k *9/00, 27/00;* A61l *15/06, 23/00*
U.S. Cl. 424—80 **2 Claims**

A composition prepared from an ingredient for solubilizing bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, such as cinnamic alcohol, and an ingredient for precipitating bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, such as a tannin, or tannic acid, and preferably a film-former, such as polyvinylpyrrolidone, said ingredient for precipitating bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated being

present in an amount of from about 0.1 to about 50 parts per part of said ingredient for solubilizing bacterial and fungal organic material and skin and subcutaneous tissue which have been abraded, incised or lacerated, is used as a solid, a solid residue of a solution, or an aqueous or dilute alcoholic solution for topical treatment of body surface. The preferred composition is pharmaceutically active in a solution to act as a biocidal agent which also has a high tendency to arrest bleeding and also has good adhesive characteristics. The composition can also be employed as a pharmaceutically active adhesive composition with elastic and flexible dressing substrates, such as foam rubber. A surgical implement, comprised of one or more surgical clips in a coated or uncoated foam rubber or the like substrate provides a simple means for the coaptation of gaping wounds. Other features of the invention appear in the following specification.

3,777,017

ESTERS OF 1,4 - BENZODIOXAN-2-CARBOXYLIC ACID AS ATTRACTANTS FOR THE EUROPEAN CHAFER

Terrence P. McGovern, Bowie, and Morton Beroza, Silver Spring, Md., and Bart J. Fiori, Geneva, N.Y., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Nov. 18, 1970, Ser. No. 90,792

Int. Cl. A01n *12/14*

U.S. Cl. 424—84 **6 Claims**

The propyl, isobutyl, butyl, isopentyl and pentyl 1,4-benzodioxan-2-carboxylates were found to be effective attractants for the European chafer.

3,777,018

COMPOSITIONS CONTAINING POLYENIC MACROLIDE AND ARYL DERIVATIVE OF ALIPHATIC ACID AND METHOD FOR TREATING HYPERLIPIDAEMIA

Harry W. Gordon, Bronx, N.Y., and Carl P. Schaffner, Trenton, N.J., assignors to Julius Schmid Inc., New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 627,313, Mar. 31, 1967, now U.S. Patent No. 3,627,879. This application July 7, 1969, Ser. No. 839,617

The portion of the term of the patent subsequent to Dec. 14, 1988, has been disclaimed

Int. Cl. A61k *21/00*

U.S. Cl. 424—117 **6 Claims**

Orally administered compositions for treating hypercholesterolemia are described herein, these compositions comprising an effective dose of (1) a polyenic macrolide selected from the group consisting of candicidin, fungimycin, hamycin, trichomycin and amphotericin B and (2) an aryl derivative of an aliphatic acid. Also the method of treating hyperlipidaemia including reducing and controlling blood cholesterol and triglyceride levels in a host is described herein.

3,777,019

STABILIZED CHLORPROMAZINE HYDROCHLORIDE SOLUTION FOR USE IN DISPOSABLE CARTRIDGES

Howard J. Levin, Norristown, Pa., assignor to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Feb. 3, 1971, Ser. No. 112,427

Int. Cl. A61k *27/00*

U.S. Cl. 424—175 **1 Claim**

The invention is directed to a stable, injectable solution of chlorpromazine hydrochloride for use particularly in disposable cartridges. The chlorpromazine hydrochloride has known utility in pharmacology as a tranquilizer.

3,777,020

PSORIASIS TREATMENT WITH MYCOPHENOLIC ACID

Irving S. Johnson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

No Drawing. Continuation-in-part of application Ser. No. 191,824, Oct. 22, 1971, which is a continuation-in-part of application Ser. No. 93,432, Nov. 27, 1970, both now abandoned. This application Aug. 14, 1972, Ser. No. 280,626

Int. Cl. A61k *27/00*

U.S. Cl. 424—180 **3 Claims**

Psoriasis is treated orally and topically with mycophenolic acid or its β-D-glucuronide.

3,777,021

METHOD OF STABILIZATION OF PLANT ROOTS AND EXTRACTS THUS STABILIZED

Jacques Perrin, 40 Rue Pierret, Neuilly-sur-Seine, France

No Drawing. Filed Feb. 8, 1971, Ser. No. 113,733

Claims priority, application France, Feb. 10, 1970, 7004591

Int. Cl. A01n *3/00*; A61k *27/14*

U.S. Cl. 424—195 **4 Claims**

A method stabilization of roots and plants for the purpose of obtaining extracts of said roots, such as valerian extract in which the stabilizing process is applied as soon as the roots are gathered and in the actual places of the crops, the roots being immediately plunged into a bath of solvent such as propylene-glycol, polyol, etc., brought up to a temperature preferably at least equal to 120° C. The roots are then ground and put into a press, after which the compressed cake is mixed with propylene-glycol or alcohol at 95° containing chloroform before being again passed into the press. The various concentrates thus collected form the desired extract and correspond weight for weight to the fresh plants. The invention also specifies a medicinal association of this extract with barbiturates.

3,777,022

DISINFECTANT COMPOSITION

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 788,926, Jan. 3, 1969. This application June 28, 1971, Ser. No. 157,671

Int. Cl. A61l *1/00*

U.S. Cl. 424—150 **11 Claims**

An iodine-phenol disinfectant composition of enhanced stability in both concentrate and aqueous use dilution form, said composition consisting essentially of 1 to 10% of a germicidal phenolic compound in which at least two, and preferably three, of the 2, 4 and 6 positions have substituents selected from the class consisting of halogen, nitro, phenyl, halogenated phenyl, benzyl, halogenated benzyl and halogenated hydroxy benzyl groups, and not more than one C_1 to C_6 alkyl or C_3 to C_6 cycloaliphatic group, and in which substituents not otherwise accounted for are selected from the class consisting of hydrogen, halogen and not more than one additional alkyl group, 2.5 to 35% of an ionic detergent providing about 1 to 10 parts per part by weight of phenolic, an amount of iodine within the range of about 0.25% to 5% by weight with the limitation that the amount of iodine does not exceed the weight of phenolic compound, an acid, optional with a trisubstituted phenol and essential with *a* disubstituted phenol, in an amount not exceeding about 40% by weight, and a diluent selected from the class consisting of solid diluents, aqueous alcoholic diluents providing not more than 25% alcohol and an amount of water in excess of the alcohol present, and water, if the only diluent, comprising at least 10% by weight of said composition.

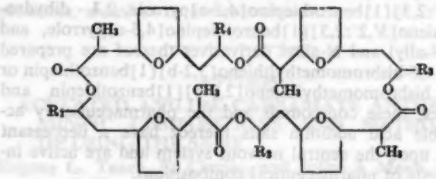
3,777,023

MACROTETROLIDE MITICIDE AND INSECTICIDE

Takao Sagawa, Seiji Hirano, and Nobuhiko Tanaka, Tokyo, and Kunihiko Togashi, Kashiwa, Japan, assignors to Chugai Salyaku Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 8, 1970, Ser. No. 70,042
Claims priority, application Japan, Sept. 6, 1969, 44/70,320; Feb. 24, 1970, 45/15,360
Int. Cl. A01n 9/36
U.S. Cl. 424—200 11 Claims

An agricultural composition comprising, as active ingredients, one or more macrotetrolide compounds represented by the formula



wherein R_1, R_2, R_3 and R_4 are each selected from the group consisting of methyl and ethyl, with or without containing one or more pesticides selected from the group consisting of organo-chloric pesticides, carbamate pesticides and organo-phosphorus pesticides is disclosed.

3,777,024

SYNERGISTICALLY ACTIVATED BIOCIDAL COMPOSITIONS

Henry Martin and Volker Dittrich, Basel, Switzerland, Georg Pissiotas, Loerrach, Germany, and Otto Rohr, Therivil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Filed Jan. 5, 1971, Ser. No. 104,143
Claims priority, application Switzerland, Jan. 8, 1970, 205/70
Int. Cl. A01n 9/36
U.S. Cl. 424—200 13 Claims

Arylpropargyl-ethers and arylpropargyl-thioethers of the formula

$$Aryl—X—CH_2—C\equiv C—R_1$$

in which X represents an oxygen or a sulphur atom, and R_1 represents a hydrogen atom, a halogen atom, an alkyl group having from 1 to 7 carbon atoms or an unsubstituted or substituted aromatic hydrocarbon radical, as synergistic agents to biocidally active compounds other than carbamic acid derivatives.

3,777,025

THIADIAZINE FUNGICIDES AND MITICIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Application Oct. 20, 1970, Ser. No. 82,529, now Patent No. 3,655,657, which is a continuation-in-part of abandoned application Ser. No. 14,212, Feb. 24, 1970. Divided and this application Dec. 16, 1971, Ser. No. 208,987
Int. Cl. A01n 9/12
U.S. Cl. 424—246 13 Claims

A group of substituted 1H-2,1,4-benzothiadiazine-3-carbamic acid esters are useful for controlling fungi and mites. These compounds can be prepared by the reaction of an o-nitroaniline with an alkoxycarbonyl isothiocyanate followed by the alkaline hydrosulfite reduction of the intermediate formed.

A compound exemplary of the group is 1H-2,1,4-benzothiadiazine-3-carbamic acid, methyl ester.

3,777,026

N-SUBSTITUTED AMINO-N-NITROSO-AMINOACETONITRILES AS ANTI-ANGINAL AGENTS

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 113,622, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 44,654, June 8, 1970, both now abandoned. This application June 14, 1972, Ser. No. 262,473
Int. Cl. A61k 27/00
U.S. Cl. 424—248 6 Claims

Certain known N-substituted amino-N-nitroso-aminoacetonitriles, e.g., N - morpholino-N-nitroso-aminoacetonitrile, have been found to be useful as anti-anginal agents.

3,777,027

ANORECTIC COMPOSITIONS COMPRISING N-PYRIDYLALKYL - β - ALKOXY-β-TRIFLUOROMETHYLPHENALKYLAMINES

Stephen T. Ross and Charles L. Zirkle, Berwyn, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Original application Sept. 15, 1970, Ser. No. 72,536, now Patent No. 3,679,693. Divided and this application May 8, 1972, Ser. No. 251,528
Int. Cl. A61k 27/00
U.S. Cl. 424—263 11 Claims

Pharmaceutical compositions having anorectic activity comprising N-pyridylalkyl-β-alkoxy-β-trifluoromethylphenalkylamines. The active medicaments are prepared by the condensation of an N-pyridylalkylamine with a β-alkoxy-trifluoromethylphenalkyl halide.

3,777,028

5,5 - DIMETHYL - 10-HYDROXY-8-(3-METHYL-2-OCTYL) - 2-(2-PROPYNYL)-1,2,3,4-TETRAHYDRO-5H-[1] - BENZOPYRANO[3,4-d]PYRIDINE AS AN ANTI-DIARRHEAL AGENT

Louis Selig Harris, Chapel Hill, N.C., and Harry George Pars, Lexington, and Raj Kumar Razdan, Belmont, Mass., assignors to Sharps Associates, Cambridge, Mass.

No Drawing. Filed Aug. 24, 1972, Ser. No. 283,619
Int. Cl. A61k 27/00
U.S. Cl. 424—263 2 Claims

A method of controlling diarrhea by administering a therapeutically effective amount of 5,5-dimethyl-10-hydroxy - 8 - (3 - methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H-[1]benzopyrano[3,4-d]pyridine to a patient in need of such treatment.

3,777,029

CHEWABLE MULTIVITAMIN TABLETS CONTAINING ALUMINUM NICOTINATE

Louis Magid, Clifton, N. J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Continuation of abandoned application Ser. No. 704,254, Feb. 9, 1968. This application Jan. 28, 1971, Ser. No. 110,648
Int. Cl. A61k 15/12
U.S. Cl. 424—266 4 Claims

Chewable multivitamin tablets containing aluminum nicotinate.

3,777,030

SULPHUR-CONTAINING 1,4 - DIHYDROPYRIDINE DERIVATIVES FOR CORONARY VESSEL DILATION

Friedrich Bossert, Wuppertal-Elberfeld, and Wulf Vater, Opladen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

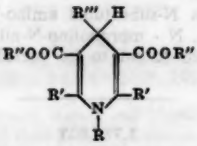
No Drawing. Original application Nov. 20, 1970, Ser. No. 91,607, now Patent No. 3,696,112. Divided and this application Feb. 25, 1972, Ser. No. 229,551

Claims priority, application Germany, Dec. 17, 1969, P 19 63 186.8

Int. Cl. A61k 27/00

U.S. Cl. 424—266 24 Claims

Sulphur-containing 1,4-dihydropyridine derivatives of the formula:



wherein

R is hydrogen, saturated or unsaturated, straight, branched or cyclic alkyl of 1 to 6 carbon atoms, unsubstituted or substituted by hydroxyl or alkoxy of 1 to 3 carbon atoms, or benzyl or phenethyl unsubstituted or substituted in the aryl moiety by 1, 2 or 3 members selected from the group consisting of 1 to 3 alkoxy moieties of 1 to 3 carbon atoms, 1 or 2 alkyl moieties of 1 to 3 carbon atoms and 1 or 2 halogen atoms,

R′ is straight or branched chain alkyl of 1 to 4 carbon atoms,

R″ is straight, branched, cyclic, saturated or unsaturated alkyl of 1 to 6 carbon atoms, said alkyl interrupted by 1 or 2 oxygen atoms or said alkyl substituted by hydroxyl,

R‴ is aryl substituted by SO_nR_1 unsubstituted or substituted by 1 to 8 members selected from the group consisting of nitro, amino, acylamino of 1 to 2 carbon atoms, hydroxyl, acyloxy of 1 to 2 carbon atoms, 1 or 2 alkyl moieties of 1 to 4 carbon atoms, 1 or 2 alkoxy moieties of 1 to 4 carbon atoms, and 1 or 2 halogen atoms,

n is 0, 1, 2 or 3, and

R_1 is lower alkyl of 1 to 4 carbon atoms or phenyl when *n* is 0, 1 or 2 and R_1 is hydrogen when *n* is 3,

are useful for their coronary dilating effect and antihypertensive effects. Processes for the production of these compounds are set forth below.

3,777,031

2-(P-PHENYLBENZYL) OXAZOLINES IN TREATING INFLAMMATION

Ying-Ho Chen and Carl Dalton Lunsford, Richmond, Va., assignors to A. H. Robins Company, Incorporated, Richmond, Va.

No Drawing. Application Sept. 9, 1971, Ser. No. 179,237, now Patent No. 3,726,893, which is a continuation-in-part of abandoned application Ser. No. 82,159, Oct. 19, 1970. Divided and this application Dec. 29, 1972, Ser. No. 319,545

Int. Cl. A61k 27/00

U.S. Cl. 424—272 13 Claims

2-(p-phenylbenzyl)oxazolines are disclosed which are prepared by reacting p-phenylphenylacetic acids with amino-alcohols under dehydrating conditions. The compounds possess anti-inflammatory activity.

3,777,032

2,3-DIHYDRO-1H-THIENOBENZOTHIEPINO[4,5-c] PYRROLES AS CNS-DEPRESSANTS

Hans Blattner ad Walter Schindler, Riehen, Basel-Land, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Dec. 16, 1970, Ser. No. 98,927, now Patent No. 3,682,959, dated Aug. 8, 1972. Divided and this application June 15, 1972, Ser. No. 263,048

Claims priority, application Switzerland, Dec. 23, 1969, 19,061/69, 19,062/69

Int. Cl. A61k 27/00

U.S. Cl. 424—274 8 Claims

Compounds of the class 2,3 - dihydro - 1H - thieno-[2′,3′:2,3][1]benzothiepino[4,5-c]pyrrole, 2,3 - dihydro-1H-thieno[3′,2′:2,3][1]benzothiepino[4,5-c]pyrrole, and the N-allyl and N-alkyl derivatives thereof are prepared from 4,5-bisbromomethylthieno[3,2-b][1]benzothiepin or 4,5 - bisbromomethylthieno[2,3-b][1]benzothiepin and amines, these compounds and the pharmaceutically acceptable acid addition salts thereof have a depressant effect upon the central nervous system and are active ingredients of pharmaceutical compositions.

3,777,033

BIS-CHROMONYL PHARMACEUTICAL COMPOSITION AND METHODS

Colin Fitzmaurice, Macclesfield, and Thomas Brian Lee, Loughborough, England, assignors to Fisons Pharmaceuticals Limited, Loughborough, England

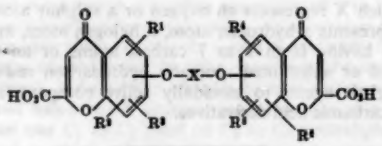
No Drawing. Application Nov. 2, 1970, Ser. No. 77,711, now Patent No. 3,686,412, which is a continuation of abandoned application Ser. No. 765,722, July 30, 1968, which in turn is a division of application Ser. No. 536,281, Mar. 22, 1966, now Patent No. 3,419,578. Divided and this application Nov. 16, 1971, Ser. No. 199,360

Claims priority, application Great Britain, Mar. 25, 1965, 12,626/65; Dec. 9, 1965, 52,414/65

Int. Cl. A61k 27/00

U.S. Cl. 424—283 10 Claims

Pharmaceutical compositions comprising a pharmaceutical carrier together with a bis-chromonyl compound selected from compounds of the formula



and functional derivatives thereof, in which R^1, R^2, R^3, R^4, R^5 and R^6 are each selected from the group consisting of hydrogen, halogen, hydroxy, lower alkyl, lower alkoxy, hydroxyloweralkyl, halooweralkyl, hydroxyloweralkoxy, loweralkoxyloweralkoxy and carboxyloweralkoxy; and X is selected from the group consisting of saturated and unsaturated, straight and branched hydrocarbon chains which may be interrupted by at least one member selected from the group consisting of benzene rings, oxygen-containing heterocyclic rings, oxygen atoms and carbonyl groups, and which may be substituted by at least one member selected from the group consisting of halogen atoms, hydroxy groups and lower alkoxy groups, are useful in inhibiting antigen-antibody reactions.

3,777,034

COMPOUNDS HAVING PHARMACOLOGICAL PROPERTIES

Jenkin Eric Davies and Jan van Dijk, van Houtenlaan, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

No Drawing. Original application July 16, 1969, Ser. No. 842,334, now Patent No. 3,658,850. Divided and this application Jan. 14, 1972, Ser. No. 217,939

Claims priority, application Netherlands, July 18, 1968, 6810333

Int. Cl. A61k *27/00*

U.S. Cl. 424—285 11 Claims

Novel O-(2-aminoethyl) oximes of alkyl 2-(and 3-) benzofuranyl ketones have been found to be useful control of nervous system activities for example as antidepressants, sedatives or anticonvulsives.

3,777,035

ACYLATED ANILIDE CARBAMATE ANTHELMINTIC COMPOSITIONS AND METHODS OF USING THE SAME

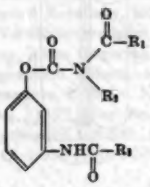
Eugene G. Teach, El Cerrito, and Julius J. Menn, Saratoga, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Mar. 29, 1968, Ser. No. 717,465, now Patent No. 3,592,949. Divided and this application Feb. 22, 1971, Ser. No. 117,791

Int. Cl. A61k *27/00*

U.S. Cl. 424—300 12 Claims

Compounds corresponding to the formula



in which R_1 and R_2 are independently lower alkyl, halogenated lower alkyl, lower alkenyl, cycloalkyl, phenyl substituted phenyl in which the substituents are nitro, halogen, lower alkyl or lower alkoxy and R_3 is hydrogen, lower alkyl, cycloalkyl, halogenated lower alkyl, lower alkenyl, furyl or benzyl. The above-defined compounds are effective as herbicides, insecticides and animal parasiticides, especially as anthelminthics. Representative compounds are: 3'-(N-methyl-N-acetylcarbamoyloxy) formanilide; 3' - N - isopropyl-N-trifluoroacetylcarbamoyloxy propionanilide; 3' - N - butyl-N-trifluoroacetylcarbamoyloxypropionanilide; 3' - (N - isobutyryl - N - isopropylcarbamoyloxy) propionanilide; 3' - (N - i-propyl-N-chloroacetyl-carbamoyloxy) propionanilide.

3,777,036

PESTICIDAL PREPARATIONS CONTAINING CARBAMATES

Erwin Nikles, Liestal, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Original application Sept. 9, 1968, Ser. No. 758,618, now Patent No. 3,655,730. Divided and this application Jan. 10, 1972, Ser. No. 216,762

Claims priority, application Switzerland, Sept. 14, 1967, 12,862/67

Int. Cl. A01n *9/12*

U.S. Cl. 424—300 26 Claims

The invention comprises new alkenylaminophenylcarbamates and their use in preparations for combating pests, preferably insects and acarides.

3,777,037

CINNAMYL PHENOLS USEFUL AS ANTIMICROBIAL AGENTS

Leonard Jurd, Berkeley, Alfred Douglas King, Jr., Martinez, and William L. Stanley, Richmond, Calif., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Original application Sept. 22, 1970, Ser. No. 74,485, now Patent No. 3,745,222, dated July 10, 1973. Divided and this application Oct. 31, 1972, Ser. No. 302,621

Int. Cl. A01n *9/26*

U.S. Cl. 424—341 3 Claims

Substances which are subject to microbial spoilage are preserved by addition of a cinnamyl phenol, e.g., 2-cinnamyl-phenol, 4-cinnamyl phenol, 2-methoxy-4-cinnamyl-phenol, 2-cinnamyl-5-methoxy-quinol, etc.

3,777,038

BAKING PROCESS AND COMPOSITIONS FOR ITS PRACTICE

Jerome B. Thompson, Rte. 3, Box 231, Cumberland, Md. 21502

No Drawing. Continuation-in-part of abandoned application Ser. No. 81,560, Oct. 16, 1970. This application Feb. 12, 1973, Ser. No. 331,882

Int. Cl. A21d *2/04, 2/22, 2/24*

U.S. Cl. 426—19 18 Claims

Iron chelates of ethylenedinitrilotetraacetate, ferrous or ferric, are incorporated in the dough mass used in the production of yeast leavened baked products made from wheat flour to improve the dough as well as the baked products obtained therefrom. Such chelates are introduced into the dough mass, as such, or by forming them in situ by the introduction of iron salts and ethylenedinitrilotetraacetates which react in the presence of dough water to form such chelates. The effect of the chelates will be found to be materially enhanced by having present therein activating traces of bromate ions therewith, the amount of bromate being about 10% to 20% of the amount that has generally been employed heretofore in the production of baked products. Thus, the amount of bromate to be employed in the practice of the present invention will be in the range of about .0001% to about .003% based on the weight of the flour.

3,777,039

HIGH AMYLOSE STARCH ADDITIVE IN LEAVENED PASTRY DOUGHS

Eric M. Van Patten, Tinley Park, and James A. Freck, Naperville, Ill., assignors to American Maize-Products Company

No Drawing. Filed Jan. 14, 1972, Ser. No. 217,999

Int. Cl. A21d *13/08*

U.S. Cl. 426—62 6 Claims

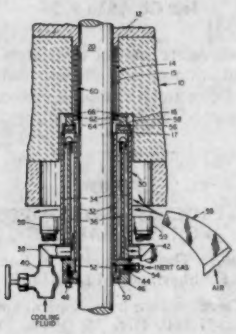
A new and improved dough for leavened pastries such as pizza is disclosed. The dough has from about 2% to about 14% of a high amylose material containing 50% or more amylose and thereby the stickiness of the dough is materially reduced, the proofing time is reduced, and yet a tender structurally stable crust is formed. Additionally, after baking, the crust has less of a tendency to shrink than normal pizza pastries and the thickness of the crust varies substantially less than standard pizza pastries.

ELECTRICAL

3,777,040
PROTECTION OF GLASS MELTING FURNACE ELECTRODE

Philip Anthony Maunsell Gell, Staffs, England; Frederick Maynard Merritt, and William Richards Steitz, both of Toledo, Ohio, assignors to Toledo Engineering Co., Inc., Toledo, Ohio and Elemelt Limited, Kingswinford, Brierley Hill, Staffs, England

Filed Apr. 25, 1973, Ser. No. 354,505
Int. Cl. C03b *5/02*
U.S. Cl. 13—6 **22 Claims**

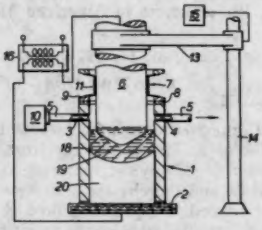


An oxidizable electrode such as molybdenum projecting vertically through a shouldered aperture in the ceramic of the bottom of an electric glass melting furnace being surrounded in said aperture below said shoulder by a water jacket, above said shoulder by a corrosion resisting metal sleeve containing high content of nickel which sleeve has an outwardly extending flange adjacent said shoulder, a refractory gasket on each side of said flange sealing said flange to said shoulder and the upper end of said water jacket, and providing a coating or layer of refractory material, such as of alumina-silica fiber or cement and/or sodium silicate, at least on the outside of said sleeve and preferably on both sides thereof, and purging the space between the electrode and said jacket and lower portion of said sleeve with an inert gas.

3,777,041
ELECTROSLAG REFINING APPARATUS

Richard John Hawkins, Kingston Upon-Thames, England, assignor to The British Iron and Steel Research Association, London, England

Filed Mar. 22, 1973, Ser. No. 343,879
Claims priority, application Great Britain, Mar. 24, 1972, 13,885/72
Int. Cl. H05b *7/12*
U.S. Cl. 13—17 **14 Claims**

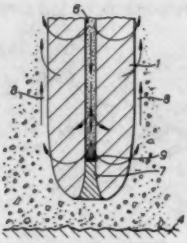


Electroslag refining apparatus comprises a mould having an upper open-end into which the lower end of an electrode depends and ducting to convey inert or reactive gaseous media to and from the mould. A device operable to restrict the flow of gaseous media is mounted on the upper end of the mould, and means are provided for effecting relative movement between the electrode and the flow restricting device. The flow restricting device includes a tubular, longitudinally-corrugated flexible member of heat-resistant material which encompasses the electrode and which is so positioned and dimensioned that the apices of the corrugations make contact with the surface of the electrode over at least part of their lengths to define with the electrode surface discrete passages which inhibit the flow of air from the atmosphere to the upper portion of the mould. The arrangement is such that variations in electrode dimension and alignment relative to the mould are accommodated by flexing of the corrugated tubular member.

3,777,042
ARC FURNACE ELECTRODES

Brian Bowman, Geneva, Switzerland, assignor to British Steel Corporation, London, England

Filed Oct. 4, 1972, Ser. No. 294,900
Claims priority, application Great Britain, Oct. 19, 1971, 48,594/71
Int. Cl. H05b *7/06*
U.S. Cl. 13—18 **8 Claims**



A method of shrouding an electrode in an arc furnace by forcing nitrogen along a bore in the electrode, which is plugged at its tip, the gas diffusing through the electrode walls so as to create a protective shroud around its sides. The gas entrains along the bore a particulate carboniferous material which coagulates and fuses together and with the plug so as to constitute a growth in this plug along the bore and compensate for erosion of the electrode tip.

It is effective on both uncoated and coated electrodes - in the latter case, the gas will function to shroud only when this coating has been eroded, i.e., it serves as a secondary protective measure.

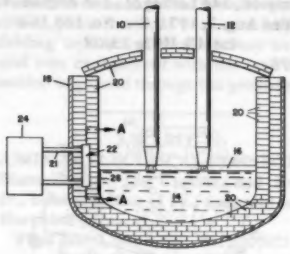
3,777,043
APPARATUS AND METHOD FOR COOLING A REFRACTORY LINING

Raymond J. O'Neill, Alameda, Calif., assignor to O'Neill Corporation, Alameda, Calif.

Filed Jan. 17, 1973, Ser. No. 324,250
Int. Cl. F27g *3/24*; F27d *1/12*
U.S. Cl. 13—32 **18 Claims**

In a vessel for producing or refining molten metal, excessive heat is generated on top of the molten metal, resulting in excessive wear of the refractory lining of the vessel. The invention provides a plurality of channels constructed within the refractory lining and means for circulating gaseous material through each channel to cool the lining to reduce wear in-

duced by heat. Spherical beads of refractory material can be packed in the plurality of channels to evenly distribute the



flow of gaseous material throughout the channels. The invention is applicable to any refractory lining wherein heat-induced wear is a problem.

3,777,044

PLASMA-ARC FURNACE

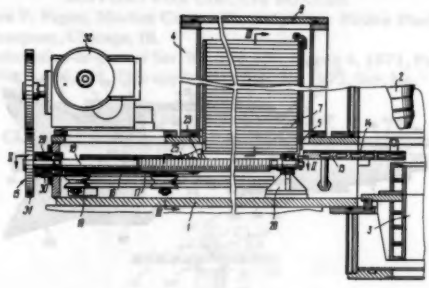
Konstantin Trofimovich Nautny, ulitsa Krasitskogo, 17, kv. 2; Viktor Iosifovich Lakomsky, ulitsa Bastionnaya, 10, kv. 30; Anatoly Ivanovich Chvertko, bulvar Lasi Ukrainki, 2, kv. 36, all of Kiev; Anatoly Vasilievich Zherdev, ulitsa Zhdanova, 3-a; Alexandr Petrovich Voropaev, ulitsa Gorkogo, 49, kv. 71, both of Kommunarsk Voroshilovgradskoi oblasti; Viktor Romanovich Pilipchuk, ulitsa Mashinostroitelnaya, 12, kv. 4, Kiev; Semen Yakovlevich Shekhter, ulitsa Brestkaya, 15, kv. 18, Kommunarsk Voroshilovgradskoi oblasti; Alexandr Mikhailovich Reznitsky, ulitsa Kirova, 2, kv. 18, Kommunarsk Voroshilovgradskoi oblasti; Leonid Nikolaevich Tsipura, ulitsa Gagarina, 23, kv. 24, Kommunarsk Voroshilovgradskoi oblasti, and Oleg Semenovich Zabarilo, ulitsa Chapaeva, 2/10, kv. 3, Kiev, all of U.S.S.R.

Filed Oct. 1, 1971, Ser. No. 186,267

Claims priority, application U.S.S.R., Oct. 1, 1970, 1479356

Int. Cl. H05b 7/00; F27d 3/00

U.S. Cl. 13—33 **4 Claims**



A plasma-arc furnace for remelting of sheet-waste material of high reactivity metals and their alloys has a furnace chamber containing a mould, plasmatrons mounted on a roof of the chamber, and a charging device for feeding sheet-waste material into a melting zone. The charging device has a hopper arranged to contain the sheet-waste material, a water-cooled base plate, guide troughs along which the sheet-waste material is fed, and controlling means to control the feed of the sheet-waste into the melting zone. The furnace expediently employs a stripping and conveying gear to deliver remelted sheet-waste material in any desired from such as a bar or slab.

3,777,045

HIGH VOLTAGE SYSTEM, PARTICULARLY CABLE

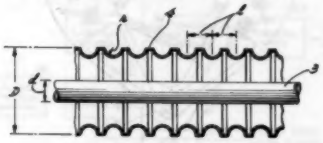
Jan Artbauer, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Germany

Filed May 30, 1972, Ser. No. 257,914

Claims priority, application Germany, June 2, 1971, P 21 27 274.2

Int. Cl. H01b 9/04

U.S. Cl. 174—28 **4 Claims**



High voltage cable with a particular first, inner conductor of circular outer cross section and contour, and a second tubular conductor coaxially arranged to the first conductor, having inwardly projecting corrugation crests of convex contour, projecting inwardly towards the inner conductor. The radius of curvature of the convexity is selected so that the electric field strength immediately adjacent the corrugation crests of the second conductor is about similar to or somewhat smaller than the field strength immediately adjacent the first conductor.

3,777,046

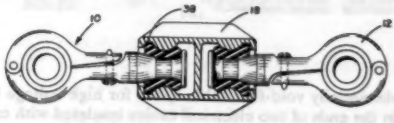
ELASTOMERIC SPACER AND/OR DAMPER FOR ELECTRICAL CONDUCTORS

Donald J. Schiavone, Huron, Ohio, assignor to Gould, Inc., Chicago, Ill.

Filed Aug. 14, 1972, Ser. No. 280,437

Int. Cl. H02g 7/14, 7/12

U.S. Cl. 174—42 **16 Claims**



A resilient spacer and/or motion damper for overhead line electrical conductors, which includes an arm having at one end a clamp for receiving an electrical conductor and the other end extending articulately with an elastomeric member into the cavity of a multi-arm spacer hub or a damping weight. The articulated end is permitted controlled movement under resilient restraint and is provided with a fail safe stop.

3,777,047

SPACER DAMPER

Charles B. Rawlins, Massena, N.Y., assignor to Aluminum Company of America, Pittsburgh, Pa.

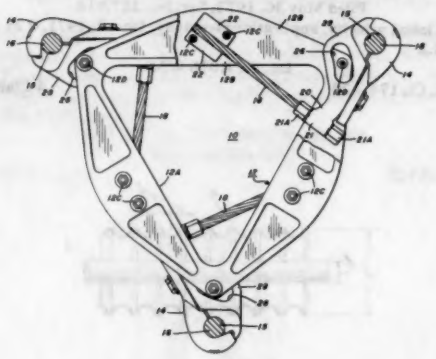
Filed Apr. 23, 1973, Ser. No. 353,650

Int. Cl. H02g 7/12, 7/14

U.S. Cl. 174—42 **3 Claims**

A damping spacer for overhead, parallel conductors in which the groove axes of conductor receiving clamps are dis-

placed from the axes of resilient wire cables respectively connecting the clamps to a spacer frame. In addition, the clamps



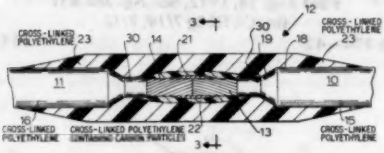
and frame are loosely coupled together to limit cable and clamp movement with respect to the frame.

3,777,048

MOLDING PROCESS FOR SPLICING CABLE AND PRODUCT FORMED THEREBY

Richard T. Traut, Danielson, Conn., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed Sept. 22, 1971, Ser. No. 182,758
Int. Cl. H02g *15/08, 1/14*
U.S. Cl. 174—73 R **11 Claims**



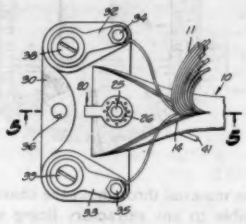
A substantially void-free cable splice for high voltage lines wherein the ends of two electrical cables insulated with cross-linked polyethylene are conductively connected by a metallic connector, the cable ends and connector then being coated with a semi-conductor shielding layer of cross-linked polyethylene having a smooth surface and having conductive particles, advantageously carbon particles, dispersed through such layer, and an insulating layer of cross-linked polyethylene monolithically bonded to the shielding layer and to the insulating layer on each cable. In a method of forming the splice, the connector-cable joint made up of abutted cable ends and a metallic connector is first wrapped with cross-linkable polyethylene tape, a close-fitting pressure-resistant cover is applied and the overall joint assembly thus formed heated in two stages, (a) to fuse the shielding polyethylene to a semi-liquid state and to drive off any occluded or formed gas, and (b) to cross-link the shielding polyethylene tape and bond it to any adjacent cross-linked polyethylene material. The resultant shielding layer and joint are cooled and then wrapped with additional cross-linkable polyethylene tape to form an outer insulating layer. The final joint assembly is next heated in a further multi-stage process, and then cooled to recover the final monolithic cable splice desired.

3,777,049

BONDING DEVICE AND ANCHORAGE FOR SHIELDED CABLES

George W. Gillemot, 2331 20th St., Santa Monica, Calif., and John T. Thompson, 244 Loring St., Los Angeles, Calif.

Filed Aug. 2, 1971, Ser. No. 168,164
Int. Cl. H02g *15/08*
U.S. Cl. 174—78 **20 Claims**



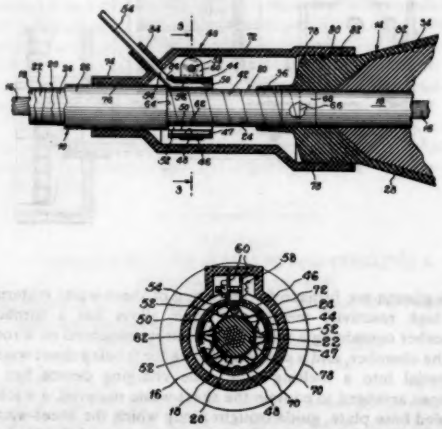
A bonding device and method for attachment to shielded electrical cables and effective in bonding the shields to a grounding conductor or to another cable shield and utilizing the strength of the cable sheath as an anchorage for the bonding device and for dead-ending the cable or cables themselves. The device comprises a one-piece, U-shaped conductive clip assembled astride the edge of the shield and sheath and having burrs which penetrate into at least the shield as an assembly bolt or stud for the clip is tightened after being inserted through aligned holes of all components. This bolt may also pass through a terminal strip or anchorage for the cable as well as through a pair of cable sheaths superimposed in back-to-back relationship.

3,777,050

SHIELDING TAPE GROUNDING DEVICE FOR HIGH VOLTAGE CABLES

Frank A. Silva, Basking Ridge, N.J., assignor to American Esna Corporation, New York, N.Y.

Continuation of Ser. No. 112,146, Feb. 3, 1971, abandoned.
This application Dec. 30, 1971, Ser. No. 214,309
Int. Cl. H02g *15/02*; H01r *3/06, 11/10*
U.S. Cl. 174—78 **47 Claims**



A shielding tape grounding device which is installed on a high voltage cable of the type having a metallic shielding tape

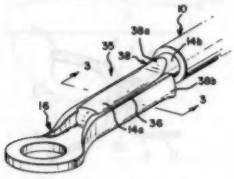
for the purpose of grounding the shielding tape, the device including a sleeve of elastomeric material, preferably electrically conductive, a corrugated band seated within the sleeve, a grounding rod connected to the band, and a clamp surrounding the sleeve and the band such that the sleeve may be slipped over the cable to place the band over a bared portion of the metallic shielding tape and the clamp may be tightened to draw the band into engagement with the tape and provide a direct connection to ground through the grounding rod.

3,777,051

ALUMINUM ELECTRICAL CONNECTION

George William Ziegler, Jr., Carlisle, and Henry William Demler, Jr., Lebanon, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jan. 2, 1973, Ser. No. 320,021
Int. Cl. H02g *15/08*
U.S. Cl. 174—94 R **2 Claims**



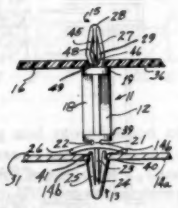
This invention relates to a connector for electrical conductors and more particularly to a connector made from aluminum and adapted to receive aluminum conductors therein. The connector includes an elongated groove wherein the inwardly facing edges of the sidewalls defining the grooves provide a scrapping action against the conductor to break up the oxide film or insulation thereon and further wherein the sidewalls are elastically flexed outwardly by the tamping of the conductor into the groove so as to maintain a continual pressure on the conductor and thereby counter creep induce by temperature change and the like.

3,777,052

SUPPORT FOR CIRCUIT BOARDS

James F. Fegen, Morton Grove, Ill., assignor to Richco Plastic Company, Chicago, Ill.

Continuation-in-part of Ser. No. 120,830, March 4, 1971, Pat. No. 3,688,635. This application Feb. 28, 1972, Ser. No. 229,800
Int. Cl. F16b *19/00*; A44b *21/00*
U.S. Cl. 174—138 D **3 Claims**



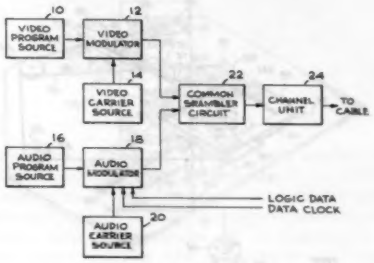
A support for circuit boards having means for detachably securing the support to a chassis, flexible means for holding the circuit board in position, and positive locking and unlocking means for removably securing a circuit board on the support, said support adapted to securely mount a circuit board in predetermined position spaced apart from a chassis.

3,777,053

CONVERTER FOR CATV

Karl Wittig, Los Angeles; Guenther Wimmer, Saugus; Patrick R. J. Court, Los Angeles, and Carl Akrell, Burbank, all of Calif., assignors to Optical Systems Corporation, Los Angeles, Calif.

Filed May 16, 1972, Ser. No. 253,768
Int. Cl. H04n *1/44*
U.S. Cl. 178—5.1 **23 Claims**



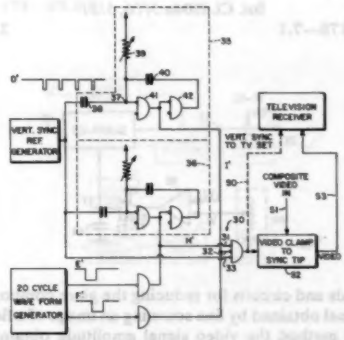
A converter for a CATV system is described. The converter includes, amongst other circuits, a reader for reading the binary bits on an encoded document and comparing them with a binary bit code which is transmitted from the transmitter on the CATV cable to a subscriber's receiver. If the code on the encoded document and the code received are identical, a signal is generated which enables the converter to process the received television signals so that the subscriber's receiver can present an intelligible program. Provision is also made in accordance with the code on the document, to select a predetermined one of a plurality of channels being transmitted over the CATV cable.

3,777,054

VERTICAL SYNCHRONIZATION TIME BASE ERROR CORRECTOR

Don J. Loughry, San Jose, Calif., assignor to Avco Corporation, San Jose, Calif.

Filed Mar. 13, 1972, Ser. No. 234,022
Int. Cl. H04m *1/22*, *5/78*
U.S. Cl. 178—6.6 SF **3 Claims**

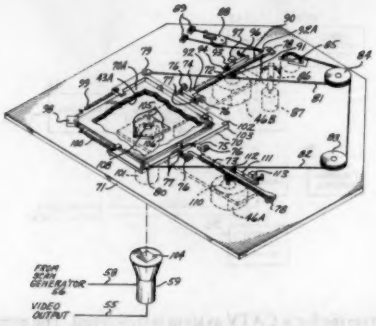


The invention discloses a means and method of eliminating jitter, during playback, in video reproducing and/or recording apparatus utilizing the skip field system. This jitter is eliminated and both horizontal and vertical continuity of sync assured by phase displacing head No. 2, and delaying, in a controlled manner, the vertical synchronizing signals applied to the television receiver for playback by heads Nos. 1 and 3.

3,777,055
HEXAGONAL PATCH PRINTING FOR ORTHOPHOTO PRINTERS

Gilbert L. Hobrough, Vancouver, British Columbia, Canada, assignor to Hobrough Limited, Vancouver, British Columbia, Canada

Filed Mar. 3, 1972, Ser. No. 231,574
Int. Cl. G01c *11/12*
U.S. Cl. 178—6.7 **7 Claims**

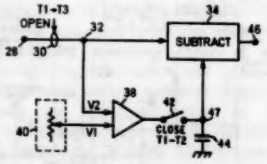


A system is described for providing video signals from left and right stereo photographs which correspond to discrete, homologous areas thereof and which are compensated for parallax and other visual distortion errors. To print a portion of an orthophotograph corresponding to this video signal, a mask defining an hexagonal patch is interposed in the light path between a cathode ray tube for displaying the video signal, and a photographic negative. To construct the entire orthophoto, the negative is mounted on a photo printing device which moves the negative in discrete increments corresponding to selective scanning of corresponding areas in the left and right stero photographs

3,777,056
VIDEO SIGNAL LEVEL CORRECTION CIRCUITRY

Leon Andre Pieters, Cambridge, England, assignor to Image Analysing Computers Limited, Melbourn, Royston, Hertfordshire, England

Filed Apr. 21, 1972, Ser. No. 246,133
Claims priority, application Great Britain, Apr. 21, 1971, 10,325/71
Int. Cl. H04n *5/16, 5/21*
U.S. Cl. 178—7.1 **20 Claims**



Methods and circuits for reducing the glare component in a video signal obtained by line scanning an image of a field.

In one method the video signal amplitude obtained when scanning a region of known grey value is compared with a reference voltage set to the theoretical amplitude level of the video signal for that grey. Any difference voltage is subtracted from the video signal so as to remove the movement of amplitude due to glare.

Alternatively this difference signal controls the gain of a variable gain amplifier amplifying the video signal or in a further modification the corrected video signal.

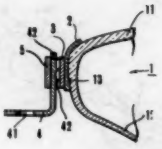
A closed loop circuit is also described in which the correction is achieved by a variable gain amplifier the gain control for which is derived from the difference signal obtained by comparing the output of the amplifier for a particular grey region with a reference voltage for that grey and clamping the white amplitude level of the amplifier output signal.

The grey region may be inserted artificially into the field and more than one such region may be employed, the difference signals obtained from the various regions being averaged.

3,777,057
CATHODE RAY TUBES

Katsuo Abe, Chiba-ken, Mobara-shi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed May 24, 1971, Ser. No. 146,042
Claims priority, application Japan, May 22, 1970, 45/43338
Int. Cl. H01j *61/50*; H01k *1/28*
U.S. Cl. 178—7.8 **7 Claims**

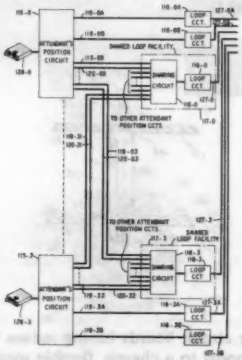


An implosion-proof cathode ray tube assembly, having a reinforcing band applied around the cathode tube, includes an adhesive tape wrapped around the cathode ray tube, a first tension band tightly wound surrounding the adhesive tape, a plurality of mounting lugs engaging the outer periphery of the first tension band at predetermined spaced positions, and a second tension band tightly surrounding the mounting lugs to force them against the first tension band.

3,777,058
OPERATOR POSITIONS HAVING BOTH DEDICATED AND SHARED LOOP FACILITIES

James Richard Stidham, Broomfield, and Louis Emanuel Thelemaque, Longmont, both of Colo., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 27, 1972, Ser. No. 275,726
Int. Cl. H04m *3/22*
U.S. Cl. 179—27 CA **16 Claims**



A switching system having operator positions is disclosed in which the position loop circuitry is separate and apart from

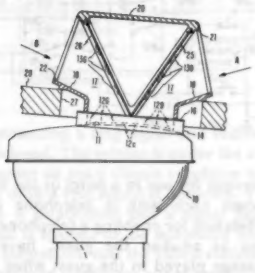
the operator position circuitry. The loop circuits are arranged so that each operator has access to a plurality of dedicated loops individual to her position as well as access to a plurality of shared loops which are common to and shared by all positions.

3,777,059

MULTIPLE DISPLAY DEVICE

Frank Wilkey, Jr., Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,318
Int. Cl. G06d 3/14; G06k 15/20; H01j 29/89
U.S. Cl. 178—7.88 8 Claims



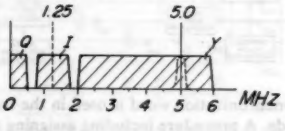
A cathode ray tube is mounted in a substantially vertical position with a multiline display presented on an upwardly facing screen. The screen is partitioned into two discrete areas with the lines of the display associated one area presenting one message and that associated with the other presenting another, independent message. A pair of converging mirrors which each reflect one of the messages to a viewing location thereby permitting the screen to provide displays for a pair of independent devices.

3,777,060

COLOR TELEVISION SIGNAL RECORDING AND REPRODUCING SYSTEM

Tushiro Kamogawa, Hirakata; Yoshihiro Okino, Kyoto; Isao Sato, Kawasaki, and Noboru Okuno, Sennan, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 3, 1971, Ser. No. 177,590
Claims priority, application Japan, Sept. 9, 1970, 45/79467; Sept. 9, 1970, 45/79468
Int. Cl. H04n 9/02
U.S. Cl. 178—5.4 CD 10 Claims



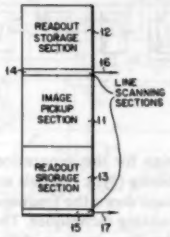
In the recording and reproduction of a color television signal including three component signals carrying color information of a scene, for instance the Y, I and Q signals, on a film by means of EVR or SV, two subcarriers at different frequencies are usually required. However, in reproduction a beat noise is likely to be created from the interference of the different subcarriers due to the light-sensitive characteristics of the film and non-linear characteristics of the system. In this respect, it is aimed to provide a color television signal recording and reproducing system, wherein one of the component signals is directly recorded without modulation and at least another component signal is recorded as a carrier-suppressed modulation signal.

3,777,061

SOLID STATE IMAGE PICKUP DEVICE

Yasuo Takemura, Kawasaki, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Oct. 11, 1972, Ser. No. 296,596
Claims priority, application Japan, Oct. 15, 1971, 46/81433
Int. Cl. H04n 9/04, 5/30
U.S. Cl. 178—5.4 R 5 Claims



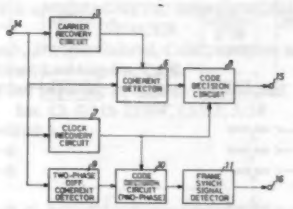
An image pickup device of solid state semiconductor which comprises an image pickup section including frame scanning means for shifting carriers corresponding to picture elements of an optical image in a longitudinal direction for each row of matrix arrangement of carriers, the carriers being stored in potential wells of the same arrangement induced in a semiconductor substrate by using the principle of the charge coupled device; first and second readout storage sections constructed with the same arrangement as the image pickup section and disposed on the portions of the semiconductor substrate longitudinally extending from the opposite sides of image pickup section; and first and second line scanning means for reading out the carriers of each row of the first and second storage sections respectively in the form of electrical signals.

3,777,062

TRANSMISSION SYSTEM FOR A TIME-DIVISIONAL MULTIPLEX PSK SIGNAL

Akira Ogawa, Tokyo, Japan, assignor to Kokusai Denshin Denwa Kabushiki Kaisha, Tokyo, Japan

Filed July 17, 1972, Ser. No. 272,345
Claims priority, application Japan, July 20, 1971, 46/53591
Int. Cl. H04l 7/00
U.S. Cl. 178—69.5 R 4 Claims

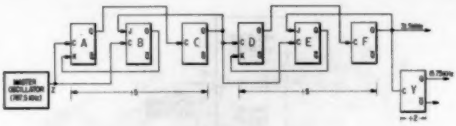


A transmission system for a time-divisional multiplex PSK signal including a frame synchronization signal in addition to information channel signals, in which the number of quantum phase positions of the frame synchronization signal is smaller than the number of quantum phase positions of the information channel signals in the time-divisional multiplex PSK signal so that the frame synchronization signal and the information channel signals are transmitted by the same modulation rate.

3,777,063
TECHNIQUE FOR ALL-DIGITAL TELEVISION SYNC GENERATION

James H. Meacham, Laurel, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 27, 1972, Ser. No. 221,242
Int. Cl. H04n 5/06
U.S. Cl. 178—69.5 G 28 Claims

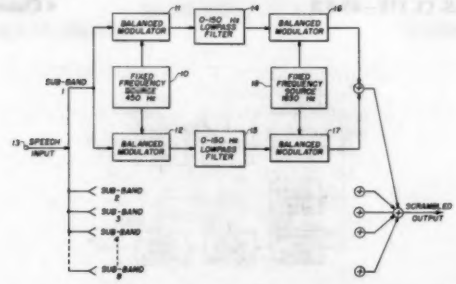


An all digital design for the generation of standard television (TV) synchronizing (sync) signals employs bistable multivibrators which count down the frequency of a basic oscillator using modulo counting techniques. The oscillator frequency is determined by the smallest differential pulse width required in generating the EIA standard format and corresponds to the interval of time preceding the horizontal pulse also known as the horizontal front porch. The modulo counter intervals coincide exactly with a majority of the required EIA pulse widths, and the accuracy of each time interval remains within specification to the same tolerance as the oscillator frequency, thereby affording significant improvement in temperature and jitter stability. The design of the invention facilitates deriving different television line and frame rates by changing only the oscillator frequency and selecting the desired modulo counters. The particular digital implementation lends itself readily to medium scale integration techniques such that the entire TV sync generator can be packaged into units about 1 inch square and one-fourth inch high exclusive of the crystal element required by the oscillator.

3,777,064
VOICE PRIVACY SYSTEM

Craig R. Allen, and John E. Celto, both of San Diego, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 1, 1972, Ser. No. 258,560
Int. Cl. H04k 1/04
U.S. Cl. 179—1.5 FS 10 Claims

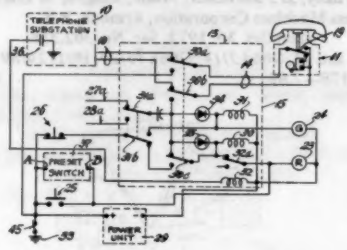


A selected bandwidth of speech frequencies is divided into a plurality of sub-bands and each sub-band is processed in a "Weaver modulator" type of circuit for filtering, frequency translation, and inversion. The sub-bands which have undergone frequency translation are then combined to provide a scrambled output which is transmitted to a receiver where the converse processing of the scrambled signals including filtering, frequency translation, and inversion is accomplished to produce the original speech modulated input.

3,777,065
CALLING SYSTEM UTILIZING A TELEPHONE

John N. Galian, Woodbury, and Ernest W. Karkut, Bridgeport, both of Conn., assignors to Total Systems Corp., Fairfield, Mass.

Filed June 30, 1971, Ser. No. 158,243
Int. Cl. H04m 3/42, 11/00, 11/02
U.S. Cl. 179—6 TA 9 Claims

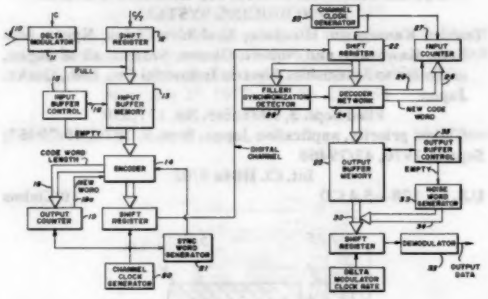


A calling system for use in a hotel or the like having a plurality of rooms each with a telephone connected to a telephone substation for enabling a telephone operator to ring the telephone to awaken the guest, have an audio prerecorded message played to the guest when the telephone is answered and provide a visual indication that the telephone has been answered. The system may also have an automatic calling switch which is presettable.

3,777,066
METHOD AND SYSTEM FOR SYNCHRONIZING THE TRANSMISSION OF DIGITAL DATA WHILE PROVIDING VARIABLE LENGTH FILLER CODE

David C. Nicholas, Cedar Rapids, Iowa, assignor to Iowa State University Research Foundation, Ames, Iowa

Filed Jan. 13, 1972, Ser. No. 217,612
Int. Cl. H04m 5/10
U.S. Cl. 178—69.5 R 7 Claims



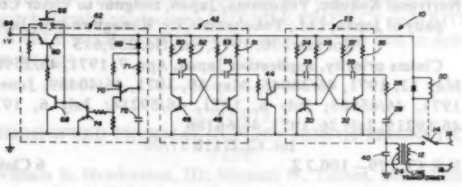
A filler/synchronization word is used in the transmission of Huffman code. A procedure including assigning all ZEROS to a dummy word is used in assigning code words to source code to limit the number of ZEROS that naturally occur in any sequence of transmission code words. The filler/synchronization word then consists of: (1) a string of ZEROS having at least one more ZERO than the longest run which can occur in a sequence of the original source words; and (2) a terminating ONE. If it is desired to synchronize the receiver with the transmitter the filler/synchronization word is sent with a minimum number of ZEROS. If the transmitter runs out of data and filler is required, ZEROS are transmitted continuously until data is available for transmission at which time a ONE is inserted to terminate the train of filler ZEROS. The receiver ignores the filler ZEROS and is automatically synchronized to decode subsequent data once the inserted ONE is discarded.

3,777,067

SYSTEM FOR DISABLING INCOMING TELEPHONE CALLS

Jack S. Kilby, 7723 Midbury, Dallas, Tex.

Filed Dec. 30, 1971, Ser. No. 214,268
Int. Cl. H04m 1/00
U.S. Cl. 179—81 R 12 Claims



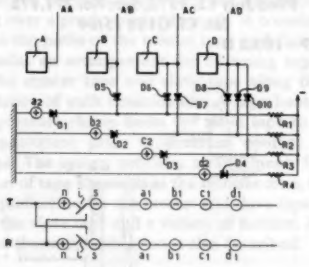
A system for detecting a ring signal and responding with a busy signal is disclosed. The system is under the control of the subscriber to present an open circuit condition to the central switching circuit until a ring signal is detected. Then a closed circuit condition is established and a signal duplicating the system busy signal is applied to the telephone line to give the calling party the impression that the called station is busy. The subscriber may activate the device either manually or by voice in response to a ring signal, or the device may be placed in an activated condition at any time and remain in the activated condition for a selected period of time to automatically respond to an incoming ring signal with an off-hook condition and a busy signal before an audible ring signal occurs.

3,777,068

CURRENT-ANALYZING AND CODING DEVICE USABLE PARTICULARLY IN TELECOMMUNICATIONS FOR NUMBER DIALING BY MEANS OF A KEY SET

Claude Monin, Villennes-sur-Seine, and Daniel Arpin, Fontenay-aux-Roses, both of France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed July 30, 1971, Ser. No. 167,574
Claims priority, application France, July 30, 1970, 7028235
Int. Cl. H04m 1/26
U.S. Cl. 179—84.55 9 Claims



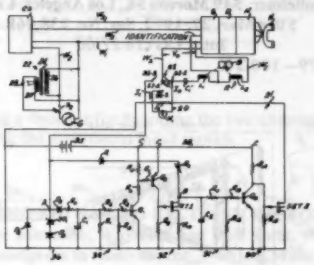
A current analyzer-coder for a number-dialing system by keyboard control with impedance variation, wherein the state of a plurality of current analyzing relays which operate only in prescribed current ranges indicates the impedance of the line, and means is provided to assure that only a single analyzing relay is engaged for each resistance value, the combination further including means for transferring the information being received to a register or recorder and consisting of a gate controlling a thyristor, and a control device authorizing the transfer only at a specific instant.

3,777,069

TELEPHONE SILENCING APPARATUS

Maw-Huei Lee, 251 Tenth St. N.W., Apt. 80, Bldg. 8, Atlanta, Ga.

Continuation-in-part of Ser. No. 112,122, Feb. 3, 1971, Pat. No. 3,710,032. This application Apr. 19, 1972, Ser. No. 245,522
Int. Cl. H04q 9/00
U.S. Cl. 179—84 R 10 Claims



Apparatus for selectively silencing the bell of a telephone wherein the method comprises selectively reducing the resultant magnetomotive force through the ringer circuit to a value below that necessary to ring the bell. The method also includes selectively increasing the ringing voltage output from the central system generator with a transformer to increase the current level in the ringer circuit and thus the magnetomotive force above that necessary to ring the bell.

The embodiment of the apparatus includes an impedance means selectively connectable between the incoming ringer hot wire and the ringer circuit of the telephone by a switch. The impedance means has an impedance valve sufficiently great to reduce the current flow through the ringer circuit and thus the magnetomotive force below that necessary to ring the bell when the standard ringing signal voltage is imposed thereon. This embodiment of the apparatus may also include a voltage step-up transformer selectively connecting the signal generator to the ringer circuit to increase the ringer voltage and the ringer current as well as the magnetomotive force to a value above that necessary to ring the bell.

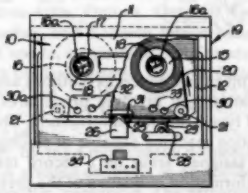
The embodiment of the apparatus also includes an accumulator circuit selectively connecting the incoming ringer hot wire with the ringer circuit in such a way as to silence the bell of the telephone until a predetermined number of ring signals have been received.

3,777,070

TAPE GUIDE AND MAGNETIC HEAD-PRESSURE PAD SPACER

Frank C. Bumb, Jr., San Gabriel, Calif., assignor to California Data Machines, Los Angeles, Calif.

Filed Sept. 23, 1971, Ser. No. 183,205
Int. Cl. G11b 23/04, 15/62, 5/58
U.S. Cl. 179—100.2 Z 1 Claim



For use in a magnetic tape transport assembly wherein a pressure pad carried by a tape cartridge is adapted to urge the

tape toward a read or write head, and in combination with said head, the improvement comprising spacer means projecting at the tape side of the head for seating the pad at a predetermined space from the head characterized in that the tape remains free for travel lengthwise in said space adjacent the head and out of contact with the pad.

3,777,071

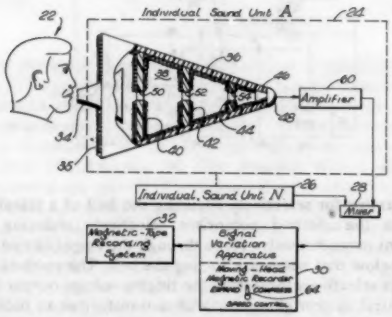
SOUND SEQUENCE INTERVAL CHANGING STRUCTURE

Jess Oppenheimer, 549 Moreno St., Los Angeles, Calif.

Filed Mar. 27, 1972, Ser. No. 238,068

Int. Cl. G11b 27/00

U.S. Cl. 179—100.2 K **11 Claims**



A system is disclosed for reproducing and recording a sound sequence in a time interval that is different than the interval of the original performance sequence. A fragment of the sound energy provided by an original performance or delivery is isolated into a substantially pure form (including essentially no echoes) and is converted into an electrical audio signal. The audio signal is then expanded or compressed to the desired time interval and subsequently recorded, as on a magnetic tape medium. As disclosed, the isolation operation involves the use of an anechoic chamber into which the sounds of the original delivery are introduced for subsequent conversion into an electrical signal.

3,777,072

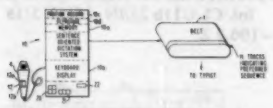
EDITING PROCEDURES FOR DICTATION AND TYPING SYSTEMS

Robert A. Kolpek; Robert A. Rahenkamp, and William R. Stewart, Jr., all of Lexington, Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1971, Ser. No. 210,862

Int. Cl. G11b 27/02, 15/02, 27/08

U.S. Cl. 179—100.2 MD **20 Claims**



The present invention concerns methods and apparatus for editing information and involves procedures for editing of both audio and typed (digital) information. The system incorporates a dictation machine capable of storing sentences and paragraphs in assigned areas on a record medium together with address information indicative of the preferred sequence of playback of such information. The system further includes a transcribing unit and a typing station having facilities for recording and playing back digital signals representative of typed copy and further having provision for storing address information on magnetic card media indicative of locations of sentences on the typed copy which is in the preferred sequence as actually typed. Several sequences may be followed in achieving a final version of the typed copy.

3,777,073

TAPE CASSETTE ADAPTER HAVING DRIVE MEANS WITHOUT A FLYWHEEL

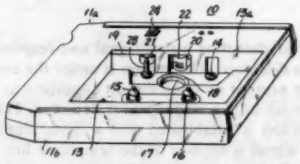
Noriyoshi Kokubo, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama-City, Kanagawa-ken, Japan

Filed Mar. 30, 1972, Ser. No. 239,615

Claims priority, application Japan, Apr. 7, 1971, 46/25987; May 12, 1971, 46/38046; May 19, 1971, 46/40489; June 2, 1971, 46/45965; July 6, 1971, 46/59214; July 6, 1971, 46/59215; July 26, 1971, 46/66186

Int. Cl. G11b 31/00

U.S. Cl. 179—100.2 Z **6 Claims**



A cassette adapter comprises, essentially, a cartridge-shaped casing for containing a tape cassette, a tape driving pinch roller driven by rotating force transmitted thereto from a rotating capstan on the side of the tape driving device of the cartridge playing apparatus, and a fixed pin or stud for projecting into the cassette thus contained. The fixed pin thus inserted takes a position on the inner side of the tape installed in the cassette. The driving pinch roller, which is made thinner than the width of the tape and rotates positively, presses against the fixed pin only over the tape interposed therebetween and thus drives the tape by friction between it and the tape.

3,777,074

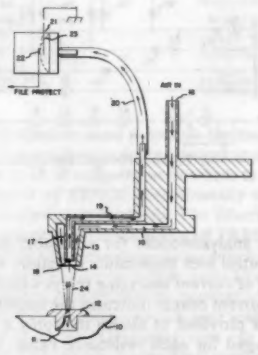
FILE PROTECT SYSTEM FOR MAGNETIC TAPE UNIT WITH DIAPHRAGM OPERATED SWITCH FOR SENSING PRESENCE OR ABSENCE OF WRITE ENABLE RING

Dennis R. Olmsted, Westminster, Colo., assignor to Storage Technology Corporation, Boulder, Colo.

Filed July 12, 1972, Ser. No. 271,172

Int. Cl. G11b 15/04

U.S. Cl. 179—100.2 D **5 Claims**



A file protect system for a magnetic recording unit includes a diaphragm actuated switch for sensing the presence of the reel ring. A supply port in a conical shaped projection guides

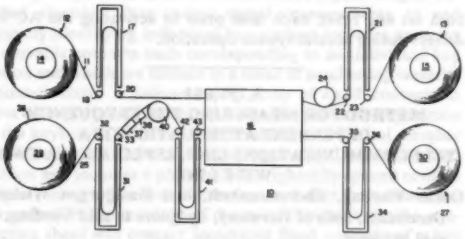
air under pressure toward the position occupied by the reel ring. When the ring is not present, the uninterrupted flow of air creates a slight vacuum in a return port. The return port extends through the conical projection and is within and on the same center line as the supply port. Flexible tubing connects the return port to the diaphragm actuated switch. When a reel ring is present in the reel, the flow of air from the supply port is disrupted thereby creating a slight pressure increase in the return port. This pressure operates the diaphragm actuated switch thereby producing a NOT FILE PROTECT or WRITE ENABLE signal which allows the magnetic tape unit to write on the tape.

3,777,075

HIGH SPEED THERMAL DUPLICATION OF MAGNETIC TAPE

William B. Hendershot, III; Michael W. Tallent, both of San Jose; David Wald, Santa Clara, and Larry K. Whitlock, San Jose, all of Calif., assignors to Consolidated Video Systems, Inc., Santa Clara, Calif.

Filed Sept. 17, 1971, Ser. No. 181,404
Int. Cl. G11b *5/00*
U.S. Cl. 179—100.2 B **49 Claims**



A system for high speed thermal duplication of a master magnetic tape onto a slave magnetic tape utilizing a master tape transport for guiding a master tape along a predetermined path between a supply station and a take-up station, and a slave tape transport for guiding a slave tape along a second predetermined path between a supply station and a take-up station, the master tape path and slave tape path being coincident over a predetermined length. A transfer station interposed in the paths of the master tape and slave tape transports includes an arrangement for clamping together under pressure the master tape and slave tape along the predetermined distance of path coincidence. A tape heater upstream from the pressure clamp heats the slave tape to a predetermined temperature prior to pressure contact against the master tape. The system provides arrangements for mechanical isolation of tape segments in the transfer area, tension control and equalization for the master and slave tapes, preconditioning of the slave tape and a variety of heaters. A system for AC assisted thermal duplication is also described.

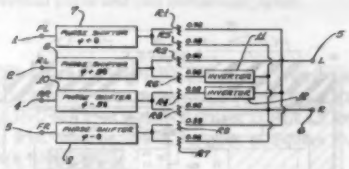
3,777,076

MULTI-DIRECTIONAL SOUND SYSTEM

Susumu Takahashi, Tokyo, Japan, assignor to Sansui Electric Co., Ltd., Tokyo, Japan

Filed July 3, 1972, Ser. No. 268,726
Claims priority, application Japan, July 2, 1971, 46/48674
Int. Cl. G11b *3/74*
U.S. Cl. 179—100.4 ST **4 Claims**

A multi-directional sound system for use in the manufacture of matrix four channel stereophono discs comprises an encoder including a plurality of phase shifters for shifting the phases of a plurality of directional input signals from discrete sound sources by angles corresponding to the directions of the sound sources and a matrix circuit for producing two channel



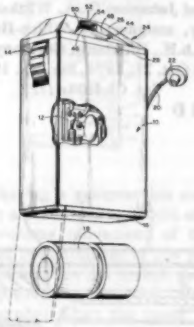
signals, and a decoder for decoding the two channel signals for reproducing the directional input signals.

3,777,077

HEARING AID HAVING RECESSED MICROPHONE

Donald Lee Johanson, Wayland, and Rolf Stutz, Weston, both of Md., assignors to Audivox, Inc., Newton, Mass.

Filed Sept. 18, 1972, Ser. No. 289,775
Int. Cl. H04r *25/04*
U.S. Cl. 179—107 R **7 Claims**



A body type hearing aid in which the microphone port is recessed from both the front and top surfaces of the hearing aid housing to substantially minimize clothing noise and to shield the microphone from contamination. The upper portion of the housing is of a multi-facetted configuration for disposition of the microphone port therein in a position removed from the front and top surfaces of the housing while still maintaining a sufficient sound aperture for receipt of sounds emanating from points to the front and sides of a user.

3,777,078

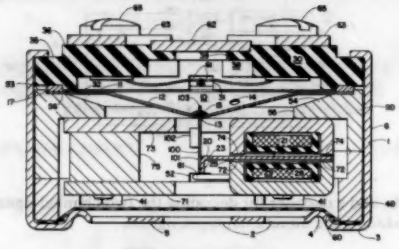
LINKAGE ARRANGEMENT IN PIVOTING ARMATURE TRANSDUCER

Radamis Boutros-Attia, Ottawa, Ontario; Conrad Lafrance, Lucerne, Quebec, and Kenneth Edwin Nixon, Ottawa, Ontario, all of Canada, assignors to Bell Canada Northern Electric Research Limited, Ottawa, Ontario, Canada

Filed Jan. 14, 1972, Ser. No. 217,926
Int. Cl. H04r *11/00*
U.S. Cl. 179—114 A **3 Claims**

A linkage bar, having a rigid central portion and flexible end portions, links a pivoted armature to an acoustical diaphragm in an electroacoustic transducer. The armature carries an extension, normal to the plane of the armature, to which one end of the linkage is spot welded. The other end of the linkage bar is attached to the diaphragm. Longitudinal motion is thus coupled between the armature and the diaphragm while as-

sociated lateral motion caused by the pivoting of the armature is substantially absorbed by the flexible end portions. The spot



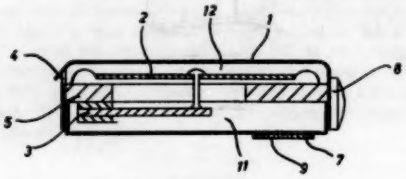
welding of the linkage to the armature is an economical production process which provides reliable joints of consistant quality.

3,777,079

DIRECTIONAL MICROPHONE FOR HEAD MOUNTED MIDGET HEARING AIDS

Detlef Fischer, and Johannes G. A. Wittkowski, both of Hamburg, Germany, assignors to Wilico-Horgerate Med. Apparatebau G.m.b.H., Hamburg, Germany

Filed Oct. 21, 1971, Ser. No. 191,404
Int. Cl. H04r *1/22*
U.S. Cl. 179—121 D **1 Claim**



A miniature microphone for a head-mounted midget hearing aid wherein the diaphragm divides the microphone housing into two separate chambers, the housing having a forward portion with a sound admitting aperture therein which is substantially non-restrictive to passage of sound waves therethrough so that the sound waves may freely enter one of the chambers within the housing; the microphone housing also having a wall portion at the rear of the microphone, said wall portion having a plurality of minute apertures therethrough and defining a transmission time delaying acoustic resistance admitting sound pressure variations into the other chamber of the housing.

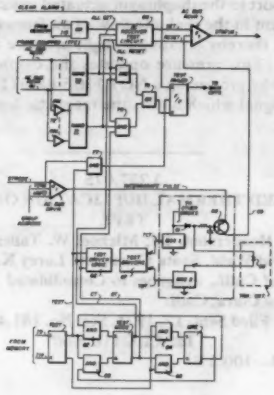
3,777,080

METHOD FOR DETECTING FAILURES IN TRUNK STATUS IDENTIFICATION CIRCUITRY

Richard A. Padgett, Lombard, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Oct. 2, 1972, Ser. No. 293,977
Int. Cl. H04m *3/26*
U.S. Cl. 179—175.2 R **15 Claims**

An arrangement for detecting failures in the trunk status identification circuitry which is used to determine the status of calls passing through a system. A scanpoint test is performed once during each scan cycle to determine the condition of the scanpoint circuits and the AC bus drivers which normally activate the scanpoints. The AC bus drivers also are tested for



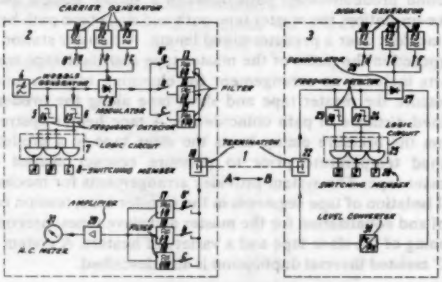
both set and reset, each time prior to activating the AC bus drivers during normal system operation.

3,777,081

METHOD FOR MEASURING THE FREQUENCY-DEPENDENT ATTENUATION OF A TELECOMMUNICATIONS LINE, ESPECIALLY A TWO-WIRE LINE

Oskar Vierling, Ebermannstadt, and Hansjurgen Wieland, Darmstadt, both of Germany, assignors to said Vierling, by said Wieland

Filed Dec. 14, 1971, Ser. No. 207,860
Claims priority, application Germany, Jan. 20, 1971, P 21 02 511.6
Int. Cl. H04b *3/46*
U.S. Cl. 179—175.3 **9 Claims**



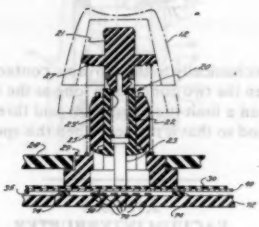
A method for measuring the frequency-dependent attenuation of a telecommunications line, especially a two-wire line, in both traffic directions, from one line end. The attenuation of the line is determined by modulation of the voltages at a measurement station with one or more carrier frequencies and transmitting the modulated voltages to another station via the line to be measured where the voltages are demodulated and converted while retaining their frequency into constant-level voltages. The constant-level voltages are transmitted via the line to be measured to the measurement station.

3,777,082

KEYBOARD SWITCH ASSEMBLY WITH IMPROVED MOVABLE CONTACT HAVING CANTILEVER SUPPORTED CENTRAL MEMBER WITH RADIALLY EXTENDING CONTACT FINGERS

Derek J. Hatley, Wyoming, and Harold R. Wilson, Holland, both of Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Filed Sept. 8, 1972, Ser. No. 287,508
Int. Cl. H01h *13/14*
U.S. Cl. 200—5 A 16 Claims



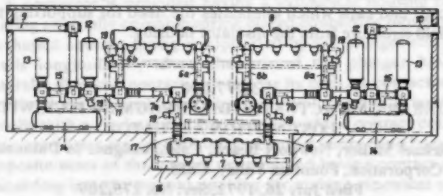
A mechanically operated keyboard with key stations having a multiplicity of electrical switch contacts for providing an encoded electrical data output signal corresponding to and uniquely identifying individual key stations includes an array of movable contacts each corresponding to an individual key station and which are formed in a sheet of conducting material mounted above a corresponding array of fixed contacts to form multiple contact electrical switches for each key station of the keyboard. Each movable contact has a central member suspended to the sheet of conducting material in cantilevered fashion and includes a plurality of peripherally spaced contact fingers joined to the central member such that the contact fingers adjacent the junction of the central member to the conducting sheet will contact associated fixed contacts of a key station only after the remaining contact fingers have come into contact with their associated fixed contacts. An electrical circuit coupled to the contact fingers provides a strobe output signal only when all of the electrical switch contacts associated with a given key station have been actuated as indicated by the closure between the contact finger adjacent the junction of the central member to the conducting sheet and its associated fixed contact.

3,777,083

PRESSURIZED GAS INSULATED SWITCHING INSTALLATION

Willi Olson, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 10, 1972, Ser. No. 279,394
Claims priority, application Germany, Sept. 29, 1971, P 21 49 287.5
Int. Cl. H01h *31/00*
U.S. Cl. 200—48 R 6 Claims



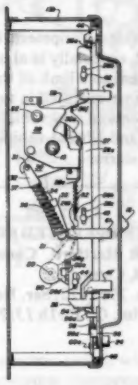
In a pressurized gas insulated switching installation having two branches that can be coupled, through power switches, with a type of bus-bar two-part ring-bar, the two parts of the ring-bar are connected with three power switches connected in series, and between the power switches the connection points for the branches are situated. The poles of the three power switches belonging to one phase are disposed in one common vertical plane and two horizontal planes.

3,777,084

SAFETY SWITCH WITH SEALABLE COVER AND INTERLOCK MEANS FOR PREVENTING OPERATION OF SEALING MEANS WHEN COVER IS FULLY OPEN

Tadeusz J. Rys, Monroe, Ohio, assignor to Square D. Company, Park Ridge, Ill.

Filed Sept. 20, 1972, Ser. No. 290,691
Int. Cl. H01h *9/22*
U.S. Cl. 200—50 A 5 Claims



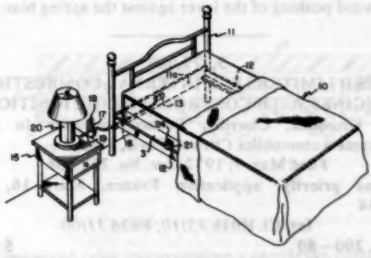
A safety switch having a reciprocable cover sealing cam member operable by a cover sealing handle and having first interlock means preventing movement of the switch blade operating handle and switch blades to ON position when the cover is open or is closed but not sealed. A second interlock means is provided preventing operation of the cover sealing handle and cam member when the cover is open, thereby preventing defeat of the first interlock means by manipulation of the cover sealing handle.

3,777,085

SURE FIND SAFETY BED LIGHT SWITCH

John J. Horn, 910 Split Rock Rd., Pelham Manor, N.Y.

Filed Feb. 7, 1972, Ser. No. 223,995
Int. Cl. H01r *13/70*
U.S. Cl. 200—51 LM 5 Claims



Bed mounted permanent and standard position switches for a remotely positioned bedroom light or lights, the switch being wired with only one leg of an electrica circuit to prevent fire and electrical hazards.

3,777,086

EQUIPMENT ON THE HUMAN BODY FOR GIVING SIGNALS, ESPECIALLY IN CONNECTION WITH ALARM SYSTEMS

Otto Riedo, Talbachliweg 18, CH-8048 Zurich, Switzerland

Filed Oct. 12, 1972, Ser. No. 297,168

Int. Cl. H01h *3/14*

U.S. Cl. 200—52 R **8 Claims**

The invention provides equipment for use on the human body, for giving signal, especially in alarm systems, comprising a vehicle for attachment to a limb of the human body, and an actuating instrument incorporated in said vehicle and adapted to respond to movements of said vehicle such that a change of position of said limb and of said vehicle affects the actuating instrument to give an alarm.

3,777,087

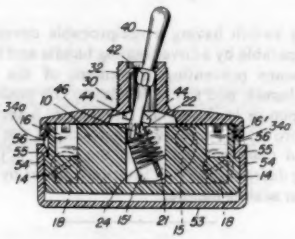
LEVER OPERATED SWITCH

Louis A. Yeske, West Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed Feb. 29, 1972, Ser. No. 230,374

Int. Cl. H01h *13/28*

U.S. Cl. 200—67 A **7 Claims**



A lever operated switch has a molded insulation body containing a snap action mechanism for moving movable contacts into and out of engagement with fixed contacts. Fixed contact terminals extend out of the body and a shield is snapped onto the body to protect the terminals. An insulation cover is snapped over the body and provides a mounting for a spring biased operating lever which has spurs that engage the body to limit inward pushing of the lever against the spring bias.

3,777,088

SPEED LIMITERS FOR INTERNAL COMBUSTION ENGINES WITH CONTROLLED COIL IGNITION

Albert Grosseau, Chaville, France, assignor to Societe Anonyme Automobiles Citroen, Paris, France

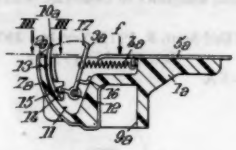
Filed Mar. 7, 1972, Ser. No. 232,536

Claims priority, application France, Mar. 16, 1971, 7109134

Int. Cl. H01h *35/10*; **F02d** *31/00*

U.S. Cl. 200—80 **5 Claims**

The speed limiter comprises, on an element rotated at a speed proportional to that of the engine, a contact fixed with respect to this element and a movable contact adapted to approach the fixed contact under the effect of the centrifugal force and against the effect of a return spring. One of these contacts is connected to the secondary winding of the ignition coil of the engine and the other to ground. When the speed of the engine reaches a predetermined threshold, the movable contact touches the fixed contact and cuts off the ignition of the engine by grounding said secondary winding. A screen of electrically insulating material is guided on said element and



connected mechanically to the movable contact so that it is inserted between the two contacts as long as the speed of the engine is less than a limit itself less than said threshold but close to the latter and so that it retracts when this speed exceeds the said limit.

3,777,089

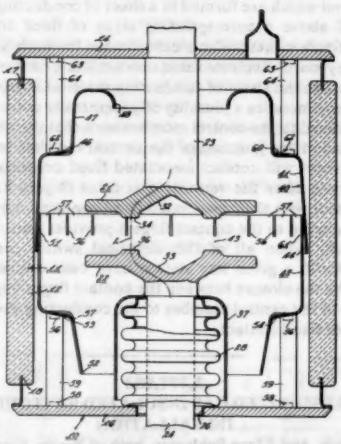
VACUUM INTERRUPTER

Allen R. Nitz, Milwaukee, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Aug. 21, 1972, Ser. No. 282,130

Int. Cl. H01h *33/66*

U.S. Cl. 200—144 B **12 Claims**



A vacuum type circuit interrupter is provided with an internal two-part shielding structure that operates as a unitary shield member for protecting the insulation of the interrupter from being impaired by arc generated metallic vapors condensating thereon. The shield structure provides a greater clearance between the shield surface and the contacts and the arc gap in a given diameter envelope than has heretofore been possible. The two-part shield structure is supported from adjacent end caps which eliminates the need for supporting the shield structure from the insulator housing.

3,777,090

LINEAR CAM ACTUATED DIAPHRAGM SWITCH WITH LOST MOTION ACTUATOR

Michael Muller, Newport Beach, Calif., assignor to Datanetics Corporation, Fountain Valley, Calif.

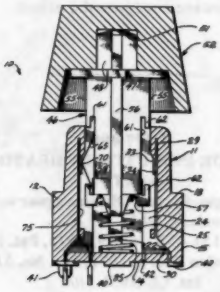
Filed July 26, 1972, Ser. No. 275,209

Int. Cl. H01h *13/50*, *3/48*, *3/12*

U.S. Cl. 200—159 B **14 Claims**

A data key assembly having a keystem which is movably mounted in a housing. The housing also supports a flat

diaphragm switch with an actuating surface which is oriented parallel to the direction of motion of the keystem. An actuating spring is coupled to the side of the keystem by a lot-motion



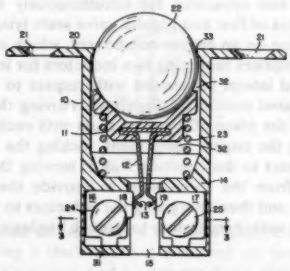
connection which provides hysteresis in the key action, and the spring slides over the actuating surface to close the switch when the keystem is depressed.

3,777,091

PUSHBUTTON SWITCH WITH ADJUSTABLE CONTACT PLATES FOR NORMALLY ON, NORMALLY OFF, AND MOMENTARY ACTION

John A. Palombo, Ansonia, and Carl M. Larime, Fairfield, both of Conn., assignors to General Signal Corporation, Rochester, N.Y.

Filed July 24, 1972, Ser. No. 274,764
Int. Cl. H01h *13/50*
U.S. Cl. 200—166 BC **12 Claims**



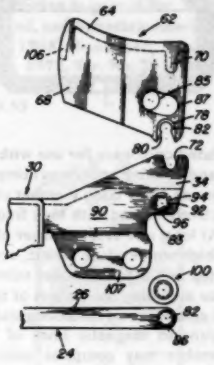
A contactor is provided having a cylindrical housing containing an axially operable spring biased contacting plunger. A U-shaped contact spring is supported by the plunger and extends longitudinally along the axis of the plunger having laterally disposed contact points near its ends. A contact supporting base is provided having a central opening extending axially within the base for the reception of the contact points. Contact plates are secured to the contact supporting base on opposite sides of the central opening and having contact ribs extending into the central opening for making electrical connection with the contact points. At least one of the contact plates can be selectively secured to the contact supporting base in one position or another for effecting circuit closures at respectively different operating positions of the plunger.

3,777,092

TRIGGER OPERATED ACTUATING MECHANISM FOR AN ELECTRIC SWITCH WITH INTEGRALLY MOLDED FULCRUM AND SNAP-ON CONNECTING MEANS ASSOCIATED WITH THE TRIGGER

Louis A. Yeske, Hartford, Conn., assignor to Arrow-Hart, Inc., Hartford, Conn.

Filed July 19, 1972, Ser. No. 273,302
Int. Cl. H01h *3/02, 9/06*
U.S. Cl. 200—172 R **4 Claims**



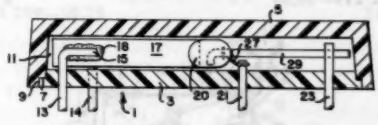
A trigger operated electric switch with a movable actuator which engages an over-center compression spring of an electric switch mechanism. The actuator is positioned between the switch casing and an actuator cover and is constrained to move rectilinearly therebetween, biased in one direction by a longitudinal spring. The trigger member has a fulcrum-type bearing molded integrally therewith and seated in a recess in the cover member. Skirt portions depend from the trigger member and provide a snap-on connection with the actuator when the bearing of the trigger-member is seated in the recess.

3,777,093

ELECTROMECHANICAL RELAY

Ronald Jay Sterns, 827 Daffodil Way, San Jose, Calif., and Francis Anthony Sutter, 7731 Rainbow Dr., San Jose, Calif.

Continuation of Ser. No. 82,361, Oct. 20, 1970, abandoned. This application May 25, 1972, Ser. No. 257,053
Int. Cl. H01h *59/00*
U.S. Cl. 200—181 **5 Claims**



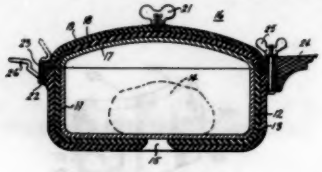
An improved relay incorporating a cantilever comprised of an elongated piezoelectric element joined to an electrical conductive armature with the armature portion of the cantilever positioned about contact means whereby the electrical circuit relationship is responsive to deflections in said piezoelectric element.

3,777,094

THERMALLY INSULATED COOKWARE FOR DYNAMIC INDUCTION FIELD HEATING AND COOKING APPARATUS

Philip H. Peters, Jr., Greenwich, N.Y., assignor to Environment/One Corporation, Schenectady, N.Y.

Filed Sept. 9, 1971, Ser. No. 179,010
Int. Cl. H05b 5/08
U.S. Cl. 219—10.49 13 Claims



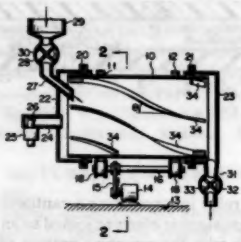
Thermally insulated cookware for use with dynamic induction field heating and cooking apparatus comprising a cooking utensil formed from an inner body member of metal susceptible to being inductively heated with high frequency magnetic induction fields. At least one exterior layer of thermally insulating material of high temperature plastic, ceramic, high temperature glass or the like is formed over substantially the entire exterior surface including the bottom of the inner metallic body member and comprises an insulating material that is substantially transparent to magnetic lines of flux. The inner metallic body member may comprise stainless steel, iron, titanium, porcelainized iron or steel, or the like and the exterior insulating covering may be a high temperature polyimid or polycarbonate plastic high temperature foam with a hardened exterior surface of plastic, a ceramic, a high temperature glass or the like. A window area preferably is formed in the exterior insulating coating which is transparent to infrared radiation rays for allowing an infrared responsive temperature sensor to view the temperature of the inner metallic body member during cooking and thereafter function to control this temperature at predetermined set levels. The exterior insulating surface preferably is formed with an attractive design providing asthetic appeal to the cookware and a lid may be provided for the cookware which also comprises an inner metallic member and an outer insulating member that allows foods contained within the cookware to be substantially surrounded by high temperature cooking surfaces which are insulated from the exterior. As a consequence, food may be maintained warm for substantially longer periods of time and very little heat loss takes place during the cooking process.

3,777,095

MICROWAVE HEATING APPARATUS

Tsuneo Muranaka, Kanagawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 15, 1972, Ser. No. 253,266
Int. Cl. H05b 9/06
U.S. Cl. 219—10.55 8 Claims



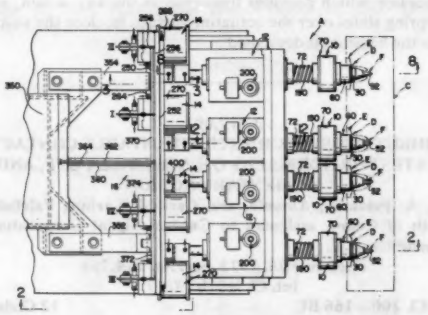
A microwave heating apparatus comprises a rotatable cylindrical heating chamber supplied with microwave energy, and means for feeding objects to be heated to said chamber and for taking out fully heated objects. Helically arranged, inwardly projecting metal strips are provided on the inner surface of the chamber for stirring and for successively forwarding the objects to be heated through the chamber to its outlet and for also agitating the microwaves so as to effect uniform application of microwave energy to the object.

3,777,096

APPARATUS FOR INDUCTIVELY HEATING VALVE SEATS

Anthony F. Del Paggio, Parma, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Division of Ser. No. 151,493, June 9, 1971, Pat. No. 3,743,809.
This application Dec. 1, 1972, Ser. No. 311,134
Int. Cl. H05b 5/06
U.S. Cl. 219—10.57 6 Claims



A method and apparatus for simultaneously heating the conical surfaces of first and second valve seats lying generally in a given plane on an engine component, which method and apparatus comprises mounting two inductors for independent reciprocal and lateral movement with respect to a common frame and biased outwardly therefrom, moving the common frame toward the plane of the valve seats until each is stopped by contacting the engine component, locking the two inductors with respect to the common frame, moving the common frame away from the valve seats to provide the necessary coupling gap, and then energizing the inductors to inductively heat the valve seats preparatory to quench hardening thereof.

3,777,097

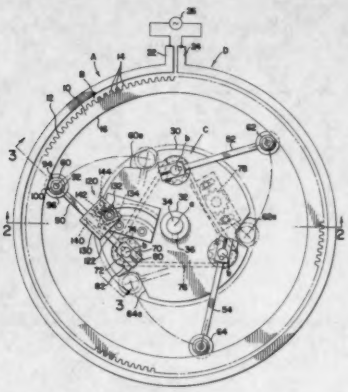
INDUCTION HEATING DEVICE FOR RING GEARS

Roger R. Budzinski, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Mar. 8, 1973, Ser. No. 339,329
Int. Cl. H05b 5/00
U.S. Cl. 219—10.59 15 Claims

An induction heating device for heating metal ring gears having an outer cylindrical periphery including the teeth and an inner cylindrical surface which is generally concentric with the periphery and with a central axis. The ring gear is rotated about the axis in close proximity with an encircling inductor whereby the teeth of the gear are inductively heated for subsequent quench hardening. In this device there is an improve-

ment including a rotatable support member having at least three outwardly movable, pivoted arms which can be adjusted



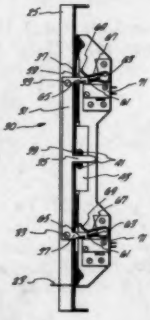
into a set position and means for allowing limited movement of the arms with respect to the set position.

3,777,098

DOOR LATCH ASSEMBLY FOR A MICROWAVE COOKING OVEN

William R. Tapper, New Brighton, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sept. 18, 1972, Ser. No. 290,000
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**



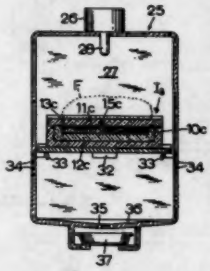
A door latch assembly for a microwave cooking oven is disclosed having a latch element mounted on the cantilevered end of the oven door and a latch receiving element mounted on the front face of the oven. The latch element includes a base member having a first aligning projection extending outwardly from the mid-length thereof, and a pair of hooked latches extending outwardly from the opposite ends thereof. The latch receiving element comprises a first fixed aperture formed adjacent the oven face for receiving the aligning projection of the latch element. The latch receiving element further includes a movable body having a pair of apertures for receiving the hooked latches of the latch element. The movable body also includes a pair of ported plates fixedly attached thereto. The plates include bearing surfaces adapted to engage and be moved downwardly by the latches. Upon further inward movement of the latches, the latches are adapted to extend into the plate ports and be secured therein by a pair of leaf springs, which function to move the plates and body upwardly in a secured position. To disengage the latches, the movable body is moved downwardly until the plate ports move out of engagement with the hook portions of the latches. The springs then function to urge the latches against the bearing surfaces of the plates to force the latches and the door away from the front face of the oven. A safety switch is connected to each port plate to be controlled by the hooked portions of the latches.

3,777,099

METHODS OF HEATING AN ARTICLE IN A MICROWAVE OVEN

Melvin L. Levinson, 1 Meinzer St., Avenel, N.J.

Division of Ser. No. 704,389, Feb. 9, 1968, Pat. No. 3,701,872, which is a continuation-in-part of Ser. No. 470,809, July 9, 1965, abandoned, and a continuation-in-part of Ser. No. 483,144, Aug. 27, 1965, abandoned. This application Sept. 28, 1972, Ser. No. 293,006
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **13 Claims**



Methods of heating an article using microwave absorptive material, microwave absorptive combustible material, microwave nonabsorptive material, heat insulating material and/or heat conducting material are described.

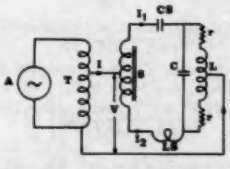
A process and an implement for converting microwave energy into heat energy which includes a body having a plurality of resistive particles therein. Upon subjecting the particles to microwave irradiation, a plurality of electric arcs are generated throughout the particles, thereby resulting in the microwave energy being converted into heat energy, and the electric arcs serving as a load for the microwave irradiation source. The implement is particularly useful with microwave ovens.

3,777,100

FREQUENCY MULTIPLYING DEVICE FOR INDUCTION HEATING APPLICATIONS

Joseph Trine, Oupeye, Belgium, assignor to Elphiac, Brussels, Belgium

Filed Dec. 8, 1972, Ser. No. 313,436
Claims priority, application Belgium, Dec. 10, 1971, 3632
Int. Cl. H05b *5/06*
U.S. Cl. 219—10.75 **3 Claims**



There is disclosed a frequency multiplying device for induction heating applications in which the supply voltage is applied between two central taps of a heating inductor and a saturable reactor. The extremities of the saturable reactor are con-

nected to those of a resonant circuit constituted by the heating inductor and a condenser in parallel therewith, through impedances such that the currents at supply frequency traversing them are of equal value and of symmetrical phases with respect to the phase of the supply voltage, the angle of each such phase being equal to 90° divided by the selected frequency multiplier and multiplied by an odd integer, so that these currents are in phase operation and their sum is nil.

3,777,101

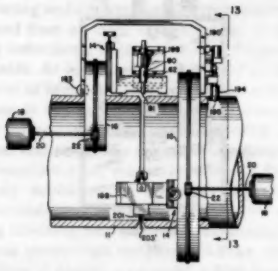
WELDING TORCH OSCILLATOR

Richard B. Gwin, 2730 Nottingham St., Arlington; William L. Ballis, 661 Leap Rd., Hilliard; Claude W. Churchheus, Box 192, Laurelville, and Bruce L. Hutt, 2724 Elliott Ave., Valley View, all of Ohio

Division of Ser. No. 189,175, Oct. 14, 1971. This application May 16, 1972, Ser. No. 253,907

Int. Cl. B23k 9/02

U.S. Cl. 219—60 A **15 Claims**



A welding head clamping and oscillating assembly is disclosed for use in a welding machine having means for supporting and moving the assembly along a joint to be welded. The assembly includes a support platform connected to the assembly supporting means of the welding machine and a support plate slidably mounted on the support platform for reciprocal movement in a direction transverse to the joint to be welded. A welding head clamp is pivotally mounted on the support plate for arcuate oscillating movement in a direction substantially parallel to the direction of the slidable mounting of the support plate and a reversible stepping motor is operatively connected to the clamp for oscillating the clamp about its pivot axis. An electrical control circuit is also provided for the stepping motor and includes logic circuitry for producing a pulse signal at a predetermined frequency and a binary counting circuit for counting a predetermined number of pulses from the signal and producing an output signal when the predetermined number of pulses is counted. The circuit includes means responsive to the output signal and operatively connected to the motor to drive the motor alternately in first and second directions in response to successive output signals from the binary counter thereby to oscillate the welding head clamp assembly about its pivot axis.

3,777,102

ELECTRICAL DISCHARGE MACHINING POWER SUPPLY CIRCUIT

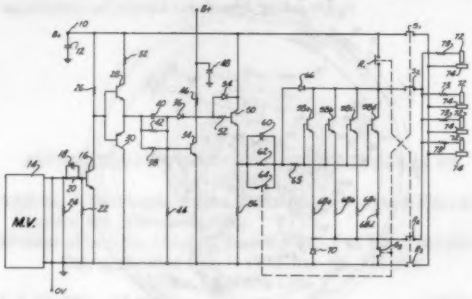
Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed July 19, 1972, Ser. No. 273,294

Int. Cl. B23p 1/08

U.S. Cl. 219—69 C **6 Claims**

A circuit for machining in a multiple gap set-up with multiple electrodes and a common workpiece or multiple electrodes and a like number of workpieces connected in circuit with a common source power supply circuit. A system is provided for reversing the polarity of electrode relative to workpiece in which the switching changeover is accomplished in the leads associated with the power source and the output switches themselves. Additionally, the circuit incorporates a special high gain current amplifier stage and a network con-



trolling the output switch triggering which incorporates an RC network for one polarity of cutting, which network is shunted by a selectively operated switching means for the other polarity of machining.

3,777,103

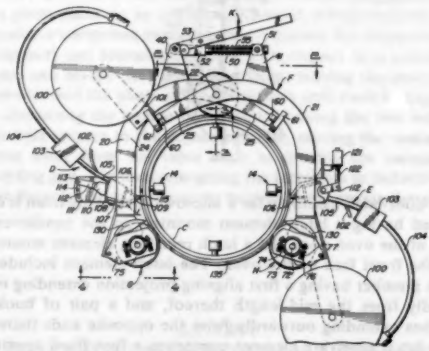
PIPE WELDING APPARATUS

Duncan A. White, and William O. Morrison, both of Kirtland, Ohio, assignors to The Lincoln Electric Company, Cleveland, Ohio

Continuation of Ser. No. 7,730, Feb. 2, 1970, abandoned. This application Sept. 19, 1972, Ser. No. 290,319

Int. Cl. B23k 9/02

U.S. Cl. 219—60 A **9 Claims**



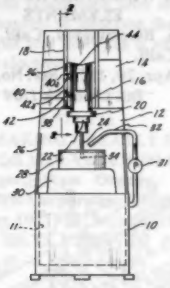
Welding apparatus for automatically welding in the groove formed by the adjacent ends of large diameter pipes comprised of welding heads mounted on a carriage having three coplanar guide wheels such that the end guide wheels are spaced at least greater than 180° from each other, which wheels forcibly engage the weld groove surfaces and guide the welding heads around the pipe in perfect alignment with the weld groove. Usually two welding heads are provided so that the welding is substantially continuous from start to finish.

3,777,104

ELECTRICAL DISCHARGE MACHINE RAM CYCLE CONTROL SYSTEM

Oliver A. Bell, Jr., Mooresville, N.C., assignor to Colt Industries Operating Corp., New York, N.Y.

Filed May 30, 1972, Ser. No. 257,926
Int. Cl. B23p 1/14
U.S. Cl. 219—69 G 11 Claims



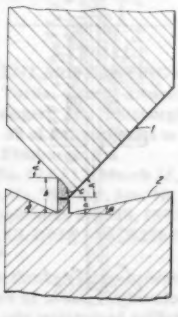
An electrode-carrying ram at controllable intervals is automatically retracted from the cavity being formed in the workpiece. This permits a coolant jet to be externally applied to the cavity to flush out the machining gap. Subsequently, the electrode is fed rapidly downwardly to a position just short of its former cutting level. At this point, the ram is returned to the control of an automatic servo feed system and normal cutting is resumed. A lower actuator is slidably mounted on a vertical track on the ram. Each time there is a downward stroke in the direction of the workpiece the lower actuator is moved slightly upwardly. This continuous progressive upward movement permits the ram and electrode to advance deeper into the workpiece cavity before the normal servo feed operation is restored. The upward movement of the actuator occurs automatically and without any requirement for operator attention.

3,777,105

METHOD FOR FORMING TRANSVERSE WELDED SEAMS BETWEEN VERTICALLY ORIENTED WORKPIECES HAVING V-SHAPED GROOVE AND BEVEL

Hans Fischer, Nurnberg, and Herbert Hellendrung, Oberhausen, both of Germany, assignors to Gutehoffnungshutte Sterkrade Aktiengesellschaft, Sterkrade, Germany

Filed June 28, 1972, Ser. No. 267,046
Claims priority, application Germany, June 29, 1971, P 21 32 143.7
Int. Cl. B23k 9/18
U.S. Cl. 219—73 6 Claims



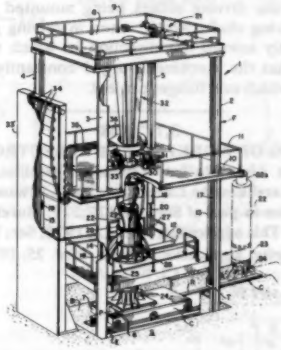
The welded seams are formed between facing edges of vertically oriented plate sections by submerged arc welding. The bottom edge of an upper section is formed with intersecting bevelled faces defining a V-shape nose in cross-section, and the upper edge of a lower thick plate section is formed with intersecting sloping faces defining a V-shape upwardly opening notch in cross-section. The sections are placed with the apices of the V-shape cross-sections in substantial alignment vertically to define opposite facing welding grooves having a common welding groove root. The faces defining the welding grooves are arranged at angles such that the welding groove sides diverge outwardly and upwardly from the root. Molten weld metal is progressively deposited along the welding grooves by submerged arc welding while the welding powder is supplied to the grooves both before and behind the pool of molten weld metal. The apparatus includes a welding wire feed guide, contact jaws for conducting current to the welding wire, a conductor for connecting the contact jaws to a source of welding current, and a powder feed pipe in the form of an inverted Y which is fixedly connected with the welding wire feed device. The outlet openings of the powder feed pipe are arranged, respectively, before and behind the contact jaws in the direction of weld formation. A pressure gas may be supplied to the powder feed pipe in advance of the Y junction.

3,777,106

ELECTROSLAG WELDING MACHINE

Albert W. Nuccel, Harrisburg, Pa., assignor to Teledyne, Inc., York, Pa.

Filed June 13, 1972, Ser. No. 262,191
Int. Cl. B23k 9/04
U.S. Cl. 219—76 44 Claims



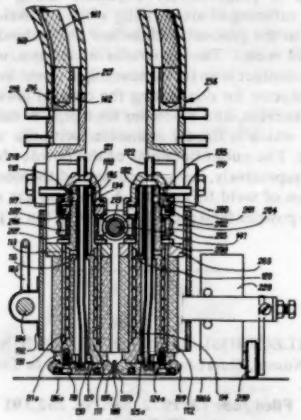
An electroslag welding machine for depositing or casting a layer of metal onto an article, comprising a frame means having means thereon for supporting an article, welding electrode means carried on a first movable portion of the frame means and disposed in close proximity to said article for depositing weld metal onto said article, cooling and shaping means carried on a second movable portion of the frame means spaced from the first movable portion and disposed in closely spaced relationship to said article to define a space therebetween, the welding electrode means extending into the space between the article and the cooling and shaping means, and drive means carried by the frame means and connected to at least one of said movable portions to cause movement thereof, said first and second movable portions being connected together for movement in unison to thus cause movement of said welding electrode means and said cooling and shaping means together relative to the article to deposit weld metal on the article and to cool and shape the weld metal deposited on said article.

3,777,107

ELECTRICAL WELDING MACHINE

Pierre Jean, Fontaine-La-Mallet, and Marcel Nias, Nantes, both of France, assignors to Gaz Transport, Paris and Etudes Et Realisations Industrielles, Nantes, France

Filed Mar. 9, 1972, Ser. No. 233,050
Claims priority, application France, Mar. 12, 1971, 7108657; Feb. 24, 1972, 7206200
Int. Cl. B23k *11/06*
U.S. Cl. 219—82 23 Claims



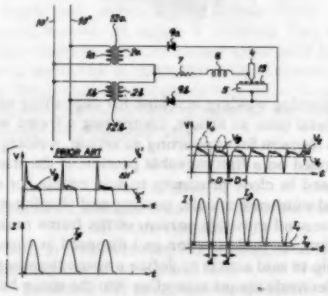
In an electrical welding machine adapted to weld flanges gripped between a pair of welding rollers, each welding roller is mounted on a pivotally mounted shaft, and the welding machine is driven by a pair of driving rollers adapted to grip the flanges, the driving rollers being mounted on pivotally mounted driving shafts which, when in driving position, are canted slightly toward the direction in which the machine travels, so that the machine is urged constantly toward the plates from which said flanges project.

3,777,108

MACHINING OF WORKPIECES BY ELECTRO-EROSION

Alfred Marie Aime Maillet, Yvelines, Versailles, France, assignor to Carel Fouche Languepin, Paris, France

Continuation-in-part of Ser. No. 127,217, March 23, 1971, abandoned. This application Nov. 13, 1972, Ser. No. 306,160
Claims priority, application France, Mar. 25, 1970, 7010718
Int. Cl. B23p *1/08*
U.S. Cl. 219—69 P 10 Claims



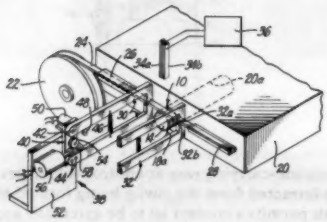
The energizing circuit of an electro-erosion system, connected across an electrode and a workpiece to be machined, comprises a source of alternating current with an operating frequency of up to 5,000 Hz from which an unbroken succession of voltage pulses is obtained by means of a full-wave rawrectification circuit. A reactance common to both branches of that circuit, such as an inductance effectively in series therewith, maintains a residual potential difference across the erosion gap as the driving voltage of the source goes to zero, resulting in continuing ionization of a substantially stationary dielectric liquid in the gap to increase the service life of the electrode by limiting the amplitude of the current pulses.

3,777,109

PROCESS AND APPARATUS FOR REMOVING UNDESIRED WINDINGS FROM WIREWOUND ELEMENTS

John L. Chapman, Bloomington, Calif., assignor to Bourns, Inc., Riverside, Calif.

Filed Apr. 20, 1972, Ser. No. 245,913
Int. Cl. B23k *1/04*
U.S. Cl. 219—85 10 Claims



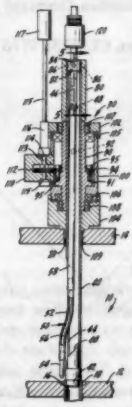
Apparatus and process for removing undesirable windings from a wirewound element wherein an elongate strip of brazing material is laid across the windings to be removed, at a substantial angle to the axis of the mandrel on which the wire is wound. An electric current is applied, for example by the use of parallel gap welding electrodes, to the brazing material at the place of contact with the windings so as to sever the windings in contact with the brazing material and the brazing material itself and simultaneously attach the severed brazing material ends to the respective ends of the severed windings. Then the resulting pieces of brazing material are grasped and pulled away from the mandrel thereby causing the attached severed windings to be removed from the mandrel.

3,777,110

WELDING GUN

Melvin G. Yohn, Canton, and Joseph P. Simon, Massillon, both of Ohio, assignors to Ecodyne Corporation, Chicago, Ill.

Filed Nov. 29, 1972, Ser. No. 310,317
Int. Cl. B23k *9/12*
U.S. Cl. 219—125 R 17 Claims



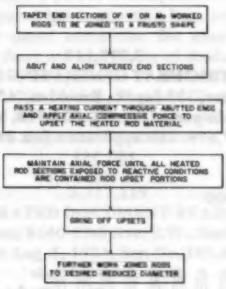
Welding apparatus for welding heat exchange tubes to tube sheets or headers for use in heat exchange equipment. The

welding apparatus includes a welding electrode which is selectively retracted and extracted from within a hollow positioning member. The positioning tube with the welding electrode in its retracted position is dimensioned to permit insertion into the header through one of the holes in the plug sheet. The positioning tube includes a bushing which is threadedly received in the plug sheet hole and a fitting which is received by the heat exchange tube being welded so as to locate and center the positioning tube. The welding electrode may then be extracted through a groove in the positioning tube and caused to rotate through a gear mechanism to describe the required circular weld. Welding material and inert gas is supplied through the center of the welding electrode.

3,777,111
METHOD OF MAKING GREATLY ELONGATED TUNGSTEN OR MOLYBDENUM MEMBERS

Hermann J. Ehringer, West Orange, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 10, 1972, Ser. No. 251,956
Int. Cl. B23k *11/02*
U.S. Cl. 219—105 **9 Claims**


TAPER END SECTIONS OF W OR Mo WORKED RODS TO BE JOINED TO A FRUSTO SHAPE
ABUT AND ALIGN TAPERED END SECTIONS
PASS A HEATING CURRENT THROUGH ABUTTED ENDS AND APPLY AXIAL COMPRESSIVE FORCE TO UPSET THE HEATED ROD MATERIAL
MAINTAIN AXIAL FORCE UNTIL ALL HEATED ROD SECTIONS EXPOSED TO REACTIVE CONDITIONS ARE CONTAINED ROD UPSET PORTIONS
GRIND OFF UPSETS
FURTHER WORK JOINED RODS TO DESIRED REDUCED DIAMETER

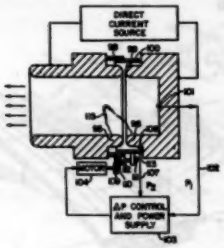
For making greatly elongated tungsten or molybdenum members, sintered or cast tungsten or molybdenum ingots are initially mechanically worked to the form of somewhat elongated rods, which are then joined to one another. The ends of the elongated rods which are to be joined are first tapered to a frustum configuration, and the tapered ends are abutted and electrically resistance heated to a plastic condition while simultaneously being forced together. This results in creating an upset of the plastic rod material, which upset is so controlled that all of the rod material which has been heated to a plastic condition and also exposed to reactive conditions is contained in the formed upset. The upset is then removed by grinding in order to remove from the now-joined rods any impurities which may have been entrapped during the welding operation, and the resulting greatly elongated rod is then further mechanically reduced in diameter to a final predetermined size.

3,777,112
RECURRENT ARC HEATING PROCESS

Maurice G. Fey, Turtle Creek; Charles B. Wolf, Irwin; Frederick A. Azinger, Jr., Pittsburgh, and George A. Kemeny, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Division of Ser. No. 124,517, March 15, 1971, which is a division of Ser. No. 790,417, Jan. 10, 1969, Pat. No. 3,629,553. This application Feb. 28, 1972, Ser. No. 229,806
Int. Cl. H05b *7/18*; B23k *9/00*
U.S. Cl. 219—121 P **2 Claims**

Gas or fluid flows through a gap between electrodes having an arc therebetween at a very high velocity while a system voltage is continuously maintained sufficient to cause breakdown at the gap. The high velocity gas elongates the arc until the arc voltage required for electrical conduction exceeds the breakdown voltage of the gap whereupon sparkover occurs in the gap, the arc being thereafter elongated again by the gas passing through the gap until the voltage required to sustain arcing exceeds the breakdown voltage of the gap, the cycle of

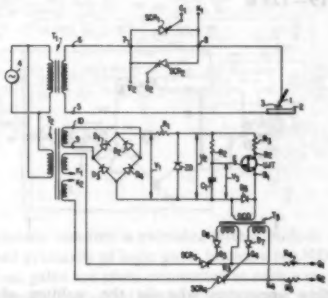


gap breakdown and elongation being repeated over and over again. The greatly extended arc provides for more efficient heating of the gas, better mixing and a more uniform temperature to which the gas is heated.

3,777,113
METHOD OF INTERMITTENT ARC WELDING USING POTASSIUM AND MAGNESIUM ELECTRODE ADDITIVES

Masayasu Arikawa; Minoru Oishi; Masaharu Rokujo, all of Fujisawa, and Tatuyuke Ishibashi, Kamakura, all of Japan, assignors to Kobe Steel Ltd., Kobe, Japan

Continuation of Ser. No. 48,340, June 22, 1970, abandoned. This application Jan. 17, 1972, Ser. No. 218,535
Claims priority, application Japan, June 21, 1969, 44/49113; Nov. 17, 1969, 44/92374; Nov. 17, 1969, 44/92376
Int. Cl. B23k *9/00*
U.S. Cl. 219—137 **1 Claim**



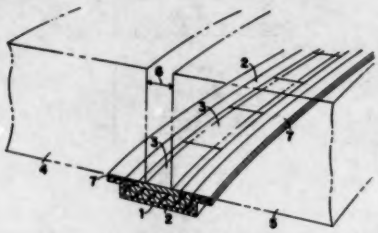
A consumable electrode arc welding process which can be used for welding in the horizontal, vertical or overhead positions which comprises applying a pulsating current to a welding electrode so that at recurring intervals a welding arc is periodically established and extinguished wherein the period of time in which the arc is extinguished ranges from 0.001 to 0.01 seconds. the arc is established for a first interval of between 0.001 to 0.01 seconds and wherein the ratio of the interval during which the arc is extinguished to the full cycle is 0.1 to 0.7. A consumable electrode useful in a consumable electrode arc welding process which comprises a mixture of potassium and magnesium or an alloy thereof wherein the quantity of potassium multiplied by the square of the quantity of magnesium exceeds 0.02. A consumable electrode arc welding apparatus comprising a welding current control circuit, a first circuit having at least one semiconductor controlled rectifying element connected in series with a welding electrode for enabling a welding current to be applied thereto, and a second circuit for controlling the gate of said element for effecting phase control such that when said welding current is applied to said electrode, it is of the pulsing type.

3,777,114

BACKUP TAPE FOR NARROW GAP WELDING

Richard W. Reynolds, 17306 Bryant Ln., Hazel Crest, Ill.

Filed Mar. 23, 1972, Ser. No. 237,434
Int. Cl. B23k 9/02
U.S. Cl. 219—160 4 Claims



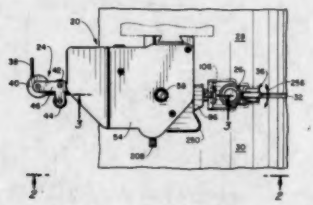
A flexible backup for closing the gap across the bottom of plates to be arc welded comprising a flexible tape shaped to form a trough along the center of its length which is filled with a refractory and deoxidizing material and metal segments of a width sufficient to cover the gap. Adhesive material is provided along the length of the exposed sides of the tape for holding the tape to the parts to be welded.

3,777,115

APPARATUS FOR CONTROLLING ELECTRODE OSCILLATION

Gasparas Kazlauskas, North Hollywood, and Kennison L. Vowell, Canoga Park, both of Calif., assignors to Astro-Arc Co., Sun Valley, Calif.

Filed Feb. 22, 1972, Ser. No. 227,886
Int. Cl. B23k 9/12
U.S. Cl. 219—125 R 19 Claims



A welding apparatus wherein the welding electrode is moved transversely in oscillating motion across the weld path, the electrode to be capable of dwelling at either the fore or aft point of maximum displacement of the transverse movement path, the voltage between the electrode and the workpiece is automatically maintained constant by means of an automatic voltage control mechanism.

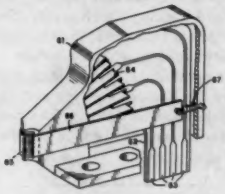
3,777,116

THERMOGRAPHIC PRINTING ARRANGEMENT

Riccardo Brescia, and Lucio Montanari, both of Turin, Italy, assignors to Ing. C. Olivetti & C., S.P.A., Torino, Italy

Filed Sept. 29, 1972, Ser. No. 293,732
Claims priority, application Italy, Oct. 4, 1971, 70244 A/71
Int. Cl. H05b 1/00
U.S. Cl. 219—216 4 Claims

A dot-matrix thermographic printing head is disclosed which is particularly adapted to print on the thermosensitive record while that record is in continuous relative motion with respect to said printing head (i.e., "in flight") comprising a plurality of printing surfaces each adapted to be selectively actuated and each having a printing surface in the form of a long thin rectangle. There is also disclosed spring arrangements which assure that changes in the length of the print heads due



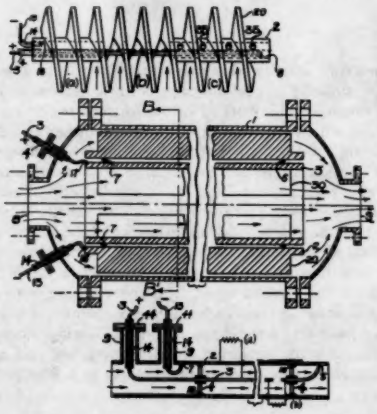
to electronic erosion are compensated for automatically. There is also disclosed electronic arrangements to prevent the head from overheating due to successive activations.

3,777,117

ELECTRIC HEAT GENERATING SYSTEM

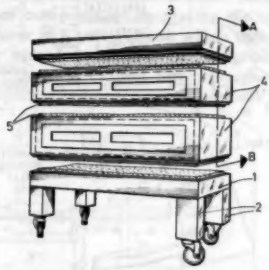
Donald F. Othmer, 333 Jay St., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 805,718, March 10, 1969, Pat. No. 3,617,699. This application Jan. 18, 1971, Ser. No. 107,351
Int. Cl. H05b 3/00
U.S. Cl. 219—300 52 Claims



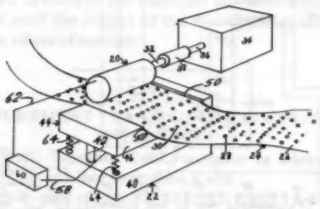
When an insulated conductor wire inside a steel tube carries alternating current as one leg of a circuit, and the tube itself carries the A.C. for the return leg, induction and magnetic effects develop which cause the A.C. flow to concentrate on the inner surface or skin of the tube, thus greatly increasing the resistance and the heat produced. No current is carried in the outer wall of tube; thus, there is no loss to ground or other surroundings. The heat-tube may be attached to or constructed so as to become an integral part of the wall of a pipe carrying a fluid, thus heating the pipe and the fluid. It may be the transport pipe itself, or it may heat an unenclosed body of fluid using heat supplied by direct contact of the fluid with both the conductor wire and the tube. The heat-tube may supply A.C. to other circuits either related or independent of the heating effect which may be quite unimportant in some of these cases.

3,777,118
BAKING OVEN
Juan Llordes Creus, Usandizaga 18, San Sebastian, Spain
Filed July 21, 1971, Ser. No. 164,768
Int. Cl. F27d *11/02*
U.S. Cl. 219—394 1 Claim



A baking oven having several baking chambers to which heat generating electric power is independently furnished. An insulating lower panel has supporting legs, and another, also insulating, upper panel completes the ensemble. Between these two panels there are a plurality of modules of the same or different heights, independent of each other, which when mounted constitute the baking chambers. Each module incorporates insulating layers on its sides approximately twice as thick as those on its upper and lower faces.

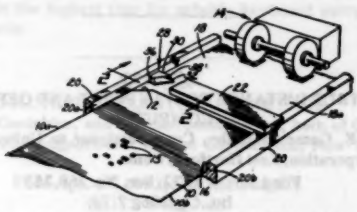
3,777,119
PERFORATED DOCUMENT READ HEAD
Richard V. Thomas, 8440-18th Ave. S.W., Seattle, Wash.
Filed Aug. 5, 1971, Ser. No. 169,442
Int. Cl. G06k *7/06*
U.S. Cl. 235—61.11 A 25 Claims



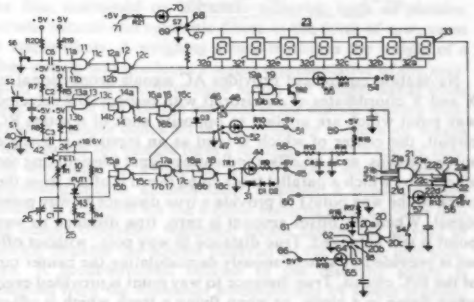
A self-adjusting, self-cleaning low mass reading sensor for a perforated document wherein a conductive elastomeric element penetrates the perforations to make contact with a conductive element on the other side of the document. A plurality of biasing means urge the two conductive elements together and compensate for conductor wear. The abraded particles of the conductive elastomeric element become electrically nonconductive upon abrading.

3,777,120
DEVICE FOR SELECTIVELY PASSING AND BLOCKING SHEETS OF PLANAR MATERIAL DEPENDING UPON THE ORIENTATION THEREOF
Joe L. Menger, and Bryce G. Thornton, both of Mentor, Ohio, assignors to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed June 23, 1972, Ser. No. 265,852
Int. Cl. G06k *13/06*
U.S. Cl. 235—61.11 R 4 Claims

A device for selectively passing or blocking credit cards introduced into a reading mechanism, passing the credit card for entry when, and only when, the card is oriented in a given position. The credit card has one corner thereof cut at a 45° angle. A pin is provided on the path of the credit card to coact with the corner of a leading edge thereof. The pin has a sloping angled surface which will coact with the angled cut of the card and allow the pin to be depressed and pass the card thereby when the angled cut corner strikes the pin signifying proper orientation; the pin also has a vertical blocking surface which will block passage of the card by engaging any other corner of the card signifying improper orientation thereof.

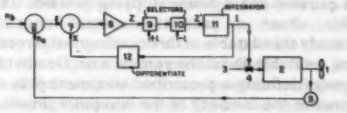


3,777,121
ELECTRONIC COUNTER
Patrick J. Jamieson, Bramalea, Ontario, Canada, assignor to Rothmans of Pall Mall Canada Limited, Toronto, Ontario, Canada
Filed Nov. 6, 1972, Ser. No. 304,212
Int. Cl. H03k *5/18*
U.S. Cl. 235—92 EA 9 Claims



An electronic counter is provided with a built-in timer and is fabricated primarily of logic gates having a NAND function. Two of these gates are cross-connected in such a way that one of them is latched so as not to change its output while a timing cycle is taking place. The presence of the timer enables the counter to give a direct readout in RPM, for example.

3,777,122
PROCESS AND APPARATUS FOR THE AUTOMATIC CONTROL OF A VARIABLE
Albertus C. H. Borsboom, Amsterdam, Netherlands, assignor to Shell Oil Company, New York, N.Y.
Filed July 30, 1971, Ser. No. 167,717
Int. Cl. G05b *11/01*
U.S. Cl. 235—150.1 9 Claims



A control system for a variable wherein the maximum rate of change of the variable is controlled by limiting the error

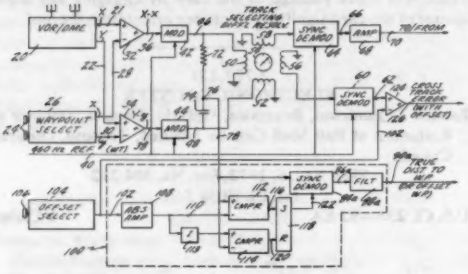
signal. The error signal is controlled so that the control system operates linearly with time when the error signal exceeds the limit and proportionally and integrally when the error signal is less than the limit.

3,777,123

TRUE DISTANCE TO WAY POINT AND OFFSET COMPUTER

John E. Games, Granby, Conn., assignor to United Aircraft Corporation, East Hartford, Conn.

Filed July 3, 1972, Ser. No. 268,253
Int. Cl. G06g 7/78
U.S. Cl. 235—150.27 **4 Claims**



Navigation equipment provides AC signals proportional to X and Y coordinates of an aircraft with respect to a selected way point which are applied to opposite ends of a series RC circuit, the center of which is used as an input to a triangle solving means, as is an offset indicating signal (designating the amount by which a parallel track to be flown is offset from the track to the way point) to provide a true distance to way point signal. When the offset amount is zero, true distance to way point is still achieved. True distance to way point without offset is provided by synchronously demodulating the center tap of the R/C circuit. True distance to way point is provided even when flying in a circle, or when flying a track which is offset from and parallel to a previously established track to a way point.

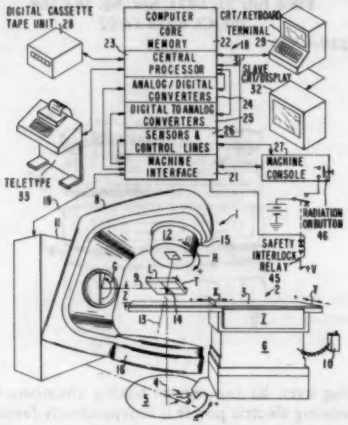
3,777,124

COMPUTER ASSISTED RADIATION THERAPY MACHINE

John M. Pavkovich, Palo Alto, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Nov. 27, 1970, Ser. No. 93,332
Int. Cl. G06f 15/42; A61n 5/00
U.S. Cl. 235—151 **8 Claims**

A computer assisted radiation therapy machine is disclosed. The machine includes a rotatable gantry having a radiation source portion and a beam stopping portion. The gantry is rotatable about a patient treatment couch which is rectilinearly translatable in three orthogonal directions as well as being rotatable about the vertical axis. Geometric and dose parameters defining a prescribed treatment plan of radiation are stored in the memory of the computer. Positional signals are derived from the various movable controls and parts of the radiation machine. The prescribed treatment parameters are compared with the actual positionings of the elements and controls of the machine to derive an interlock output when at least one of said actual parameters differs from the respective



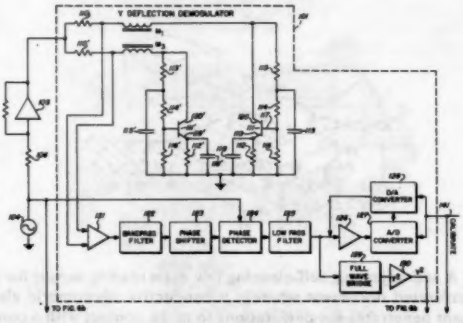
prescribed parameter. The interlock output is employed to inhibit application of radiation to the patient until the mistake is rectified.

3,777,125

DEMODULATOR FOR MAGNETIC MILLING FORCE SENSORS

William J. Whetham, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

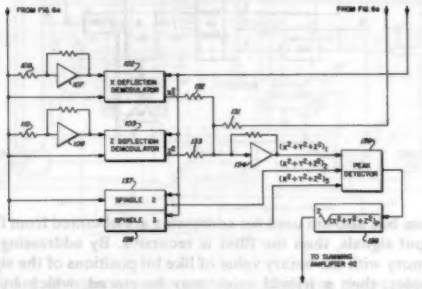
Filed Jan. 26, 1972, Ser. No. 220,746
Int. Cl. G06g 7/66; G05b 11/12
U.S. Cl. 235—151.11 **7 Claims**



An improved system is provided for sensing spindle deflection of a milling machine and developing a feedrate control signal in accordance therewith to achieve optimum tool life consistant with high metal removal rate from a workpiece. A plurality of magnetic transducers are disposed adjacent the spindle or spindles of a milling machine, and each magnetic transducer is excited by an audio frequency signal such that, as deflection of a spindle brings the spindle closer to or moves it further from a transducer, a corresponding change in the impedance characteristics of the transducer is utilized to develop an a-c signal of a given amplitude. Signals developed from opposing transducers are fed to a differential amplifier to derive a difference signal which is demodulated by a phase detector, rectified and filtered, and then passed through a squaring circuit in order that signals corresponding to the square of the deflection sensed by each transducer pair may be mixed to provide a d-c voltage representing the sum of the squares representing the deflection components. The square root of

the sum of the squares is then taken to give a feedback signal proportional to the vector sum of spindle deflection for utilization as a feedrate correction signal. For milling machines utilizing multiple spindles simultaneously, a peak detector circuit is utilized to select the largest sum of the squares only for subsequent development of the feedrate correction signal.

Changes in the resistance of the magnetic transducers due to temperature variations encountered under normal operating conditions are compensated by placing the coil of each magnetic transducer in a series circuit which includes a field effect transistor biased to perform as a variable resistor responsive to a change in current flow through the coil by presenting an apparent resistance which opposes the change



in current. Runout, which introduces an invalid deflection signal component by modulating the audio frequency reference signal according to the rate of spindle rotation, is compensated by observing the signal produced by runout from each tool holder, tool combination prior to machining, and then providing a continuous equal and opposite signal thereby leaving only the component due to actual spindle deflection. This signal also compensates for component drift. This function is carried out by a loop including a d-c amplifier which drives an A-D converter which, in turn drives a D-A converter which has its output coupled back to the input of the d-c amplifier. When activated, the calibrate circuit introduces trial signal levels until the output of the d-c amplifier is zero, thus negating the effect of runout.

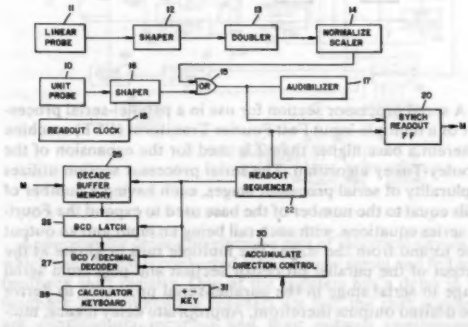
3,777,126
MEASUREMENT TRANSDUCER CALCULATOR INTERFACE

Donald G. Hoff, Tiburon, Calif., assignor to Dietzgen Electronics, Inc., South San Francisco, Calif.

Continuation-in-part of Ser. No. 815,981, April 14, 1969. This application May 3, 1972, Ser. No. 249,936

Int. Cl. G06f *7/38, 15/02, 3/05*

U.S. Cl. 235—151.3 **8 Claims**



A measurement transducer/calculator interface for processing output signals from one or more measurement transducers for input to an electronic calculator. The interface is coupled for receiving and shaping pulse signals at the frequency generated by a measurement transducer. The data signals are processed, then temporarily accumulated in a buffer memory effectively compressing the data signals which are thereafter sequenced through a decoder into the calculator input at the highest rate for reliable keyboard entry into the calculator.

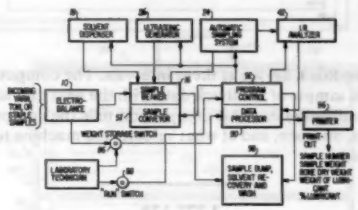
3,777,127
ANALYZER APPARATUS AND METHOD

Ronald J. Goetchius, and Michael John Collins, both of Charlotte, N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Apr. 17, 1972, Ser. No. 244,377

Int. Cl. G06g *7/58*

U.S. Cl. 235—151.3 **12 Claims**



An apparatus for measuring and computing the amount of a soluble material, such as a finish, plasticizer, lubricants and the like, contained on a carrier material, such as plastics, metals, natural and synthetic fibers in the form of tow, yarns or staple fibers. A weighing means measures the weight of a fiber sample and produces a signal representative of the measured weight. A data processor stores the weight signal while the content of the soluble material in the sample is being measured. A sample container is supported by a conveyor means which moves the sample from a loading zone to a testing zone and thereafter to a disposal and washing station. Solvent dispensing means automatically dispense a predetermined volume of a solvent for the soluble material from a source into the sample container. Agitation means agitate the solvent to quickly disperse the soluble material on the sample into solution. A predetermined volume of the resulting solute is removed from the container automatically by solute measuring means and the measured amount of solute is fed to an analyzer which determines the proportion of soluble material in the solute. The analyzer produces a signal proportional to the soluble material weight on the fiber sample. The soluble material weight signal is supplied to a data processor which then computes the percent soluble material on the starting fiber sample.

3,777,128
INPUT DATA SAMPLING SCHEME FOR COMPUTER CONTROLLED MACHINE TOOLS

Edward E. Kirkham, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

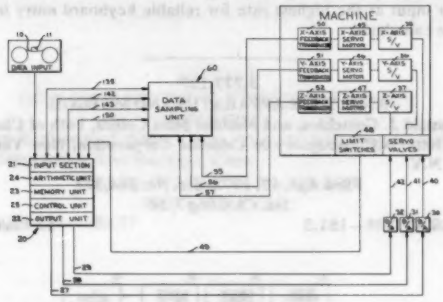
Continuation of Ser. No. 35,480, May 7, 1970, abandoned. This application Mar. 31, 1972, Ser. No. 239,966

Int. Cl. G05b *19/18*; **G06f** *15/46*

U.S. Cl. 235—151.11 **16 Claims**

An apparatus and method for sampling input data to a computer which is controlling the operations of a machine tool. A general purpose digital computer is used to provide servo control signals to the various machine tool slides. The output digital signals of the computer are converted to analog signals by digital to analog converters and fed in the machine tool servo valves which, in turn, control servomotors which, in turn, drive the machine tool slides. Data is sent back to the computer from feedback transducers which are operably con-

nected to the machine tool slides. Means are provided between the feedback transducers and the computers for passing a sampling of the feedback data at periodic intervals. The computer is programmed to request data from the particular feedback device at these intervals. The computer compares this sample of feedback data with the next previous sample of feedback data. This comparison tells the computer the direction, distance, and at what velocity the machine tool slide has moved.

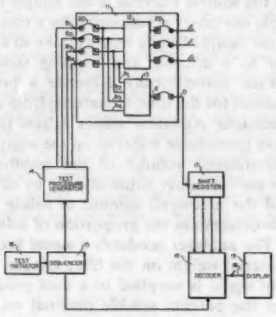


3,777,129

FAULT DETECTION AND LOCALIZATION IN DIGITAL SYSTEMS

Madhukumar A. Mehia, Addison, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed May 22, 1972, Ser. No. 255,267
Int. Cl. G01r *31/04*
U.S. Cl. 235—151.3 **9 Claims**



A method for synthesizing a test function which can detect and isolate a fault to the single input of a multiple input circuit and means for utilizing the resulting function is disclosed. The test circuit is a function only of the number of inputs to the circuit under test and not a function, as is the usual case, of what the circuit under test is performing.

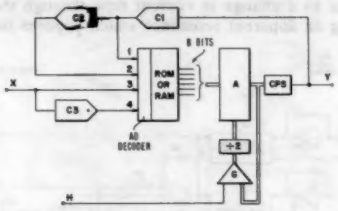
3,777,130

DIGITAL FILTER FOR PCM ENCODED SIGNALS

Alain Croisier, Cagnes; Daniel J. Esteban, La Gaude; Marc E. Levilion, and Vladimir Riso, both of Nice, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 15, 1971, Ser. No. 208,345
Claims priority, application France, Dec. 17, 1970, 7047123
Int. Cl. G06f *1/02*, *15/34*
U.S. Cl. 235—152 **4 Claims**

A digital filter either of a recursive or transversal type responsive to successive digitally encoded analog signal samples of m bits each. The filter comprises an accumulator for multiplying and summing a weighted hybrid value obtained from a memory medium addressed by a selected one of the m bits of each of N digitally encoded signal samples. If the bits of the N samples used for addressing the memory are derived from successive input signals only, then the filter is of the transversal type. If V of the N signals whose bits are used for addressing are from the input samples and R of the N signals whose bits also are used for addressing are obtained from filter output signals, then the filter is recursive. By addressing the memory with the binary value of like bit positions of the signal samples, then a hybrid value may be stored, which hybrid value need only be multiplied and combined by the accumulator. This permits the use of a substantially smaller memory than that required if the digits of the signals looked up the completed weighted function.

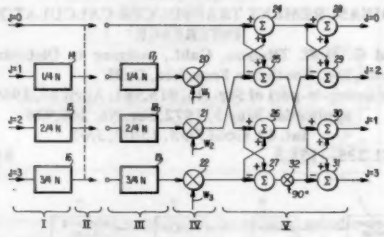


3,777,131

HIGH BASE MULTIPLE RAIL FOURIER TRANSFORM SERIAL STAGE

Richard E. Llewellyn, Greenbelt, Md., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Feb. 8, 1972, Ser. No. 224,501
Int. Cl. G06f *7/38*, *15/34*
U.S. Cl. 235—156 **19 Claims**

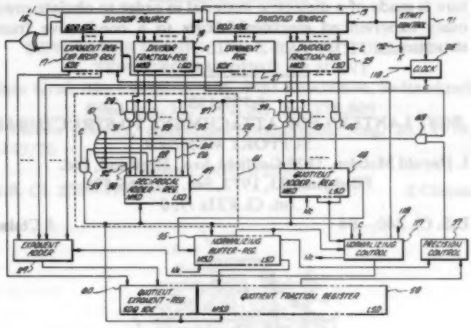


A serial processor section for use in a parallel-serial processor of a multiple-input Fast Fourier Transform (FFT) machine wherein a base higher than 2 is used for the expansion of the Cooley-Tukey algorithm. The serial processor section utilizes a plurality of serial processor stages, each having a number of rails equal to the number of the base used to expand the Fourier series equations, with each rail being an input and an output line to and from the stage. The multiple rails originate at the output of the parallel processor section and pass from serial stage to serial stage in the parallel-serial processor to derive the desired outputs therefrom. Appropriate delay means, multiplier means and summing circuits are utilized in the serial processor section in order to generate outputs therefrom in accordance with the Cooley-Tukey algorithm.

3,777,132
METHOD AND APPARATUS FOR OBTAINING THE RECIPROCAL OF A NUMBER AND THE QUOTIENT OF TWO NUMBERS

Walter Scott Bennett, Jr., Diamond Bar, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Feb. 23, 1972, Ser. No. 228,536
Int. Cl. G06f 7/52
U.S. Cl. 235—164 24 Claims

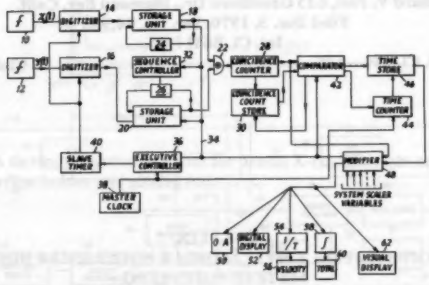


Binary division is performed by multiplying the reciprocal of a divisor by a dividend. The quotient is generated at the same time as the reciprocal of the divisor, the reciprocal being generated by a method and apparatus that multiplies the divisor by an evolving multiplier that forces the product to be a series of binary ones. Generation of the evolving multiplier is terminated at the end of one of its repeating periods, the multiplier thereby equaling the reciprocal of the divisor in all bits generated.

3,777,133
CROSS CORRELATOR

Maurice Sidney Beck, 10 Hazelhurst Rd., Bradford 9, Yorkshire; Gerald Musgrave, 3 Langley Ln., Tong Park, Baildon, Yorkshire, and Colin Norman Wormald, 109 Healey Ln., Batley, Yorkshire, England

Filed Jan. 24, 1972, Ser. No. 220,017
Claims priority, application Great Britain, Jan. 26, 1971, 3,193/71
Int. Cl. G06g 7/19; G06f 15/34
U.S. Cl. 235—181 6 Claims

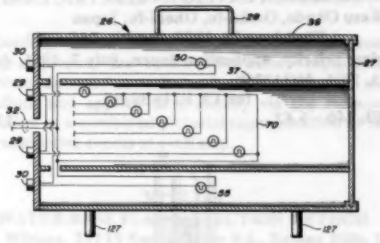


Apparatus for cross-correlating a pair of electrical signals in which each signal is converted into a binary signal and fed to a feedback shift register. One of the registers has a delay in its feedback path. When the registers are full, the shift registers are continuously recycled and their outputs continuously compared by an exclusive - NOR gate. A counter coupled to the exclusive - NOR gate counts the number of coincidences in a single cycle of the contents of the shift registers. This count is compared with the highest count attained in a previous cycle, the new count being held in a count store if higher than the previous highest count. The time between the start of the comparison and the time at which the highest count is obtained is stored in a separate time store. After each cycle the delay between the signals increases by one clock pulse. The time store then gives the delay for maximum correlation. In a further embodiment the invention operates with signals having three or more discrete levels in place of binary signals.

3,777,134
KEYBOARD ACTUATED LIGHTING INSTRUMENT

William B. Conner, 117 S. 4th St. Apt. 507, Allentown, Pa.

Filed Apr. 12, 1973, Ser. No. 350,526
Int. Cl. A63j 17/00; F21p 5/02; G09b 15/00
U.S. Cl. 240—10 R 3 Claims



A keyboard actuated lighting instrument, generally drum shaped, includes a circular shaped translucent member. A first cylindrical housing has one end thereof affixed to the translucent member. A second cylindrical housing, having a radius smaller than that of the first housing, is oriented concentric with the first housing so as to abut with the translucent member. A first plurality of partitioning members are affixed to and radially extend from the second housing to the first housing, the partitioning members having ends thereof in abuttment with the translucent member. A first plurality of different colored lamps are housed in the annular ring formed by the housings, one and one only of the lamps being housed, respectively, in each sector formed by the partitioning members. A second plurality of different colored lamps are oriented within the second housing. A circular wall is coupled to the opposite end of the first housing. Each one of a first plurality of switches, corresponding in number to the first plurality of lamps, is coupled to a single different lamp. Each one of a second plurality of switches, corresponding in number to the second plurality of lamps, is coupled to a different single lamp. Suitable means couple the first and second pluralities of switches to the exterior of the circular wall. Provision is made to electrically couple a potential source to the lamps and switches.

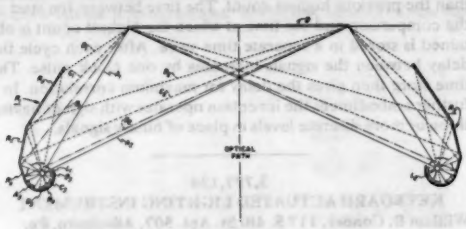
3,777,135
ILLUMINATION SYSTEM

James D. Rees, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 157,754, June 28, 1971, abandoned, which is a continuation of Ser. No. 813,201, April 3, 1969, abandoned. This application July 11, 1972, Ser. No. 270,750
Int. Cl. F21v 7/00; G03b 27/54
U.S. Cl. 240—41.35 R 13 Claims

An illumination system having four lamps arranged orthogonally around a subject to be illuminated with each lamp positioned outside the corresponding adjacent edge of

the subject. A reflector system having a cylindrical surface and a plurality of flat reflectors are associated with each of



the lamps for directing light rays to the subject from the adjacent edge thereof to the edge opposite thereto.

3,777,136

UMBRELLA HAVING AN ELECTRIC LAMP

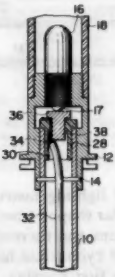
Shigekazu Okuda, Osaka-fu, Ohaki-fu, Japan

Filed June 23, 1972, Ser. No. 265,605

Claims priority, application Japan, July 7, 1971, 46/59318; Dec. 3, 1971, 46/113750

Int. Cl. F21r *33/00*

U.S. Cl. 240—6.42 **12 Claims**



An umbrella having a tubular stem, a handle member housing a power source attached to one end of the tubular stem, and an electric lamp mounted on the other end of the tubular stem, at the top of the umbrella. Water-proof seals are provided at each end of the hollow tubular stem by a solid terminal plug press-fitted into a synthetic resin sleeve which in turn is press-fitted into the tubular stem.

3,777,137

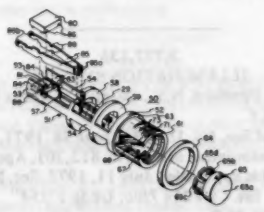
LAMP HOLDER ASSEMBLY

James J. Costanzo, River Grove, and Eugene R. Hrdlicka, Elmwood Park, both of Ill., assignors to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Sept. 29, 1972, Ser. No. 293,636

Int. Cl. F21v *21/00*

U.S. Cl. 240—52 R **1 Claim**



A lamp holder assembly includes a frame structure having an interior cavity within which to mount a lamp device including electric contact blades for positioning said lamp device within said cavity and providing electrical contact thereto, and further including a plurality of stepped motor surfaces of different diametrical dimension, each of said inner surfaces being slotted to matingly receive a correspondingly diametrically sized front end display cap. A plug member is removed from a base portion of the frame structure for inserting the pair of contact blades and thereafter the plug member is ultrasonically welded within the base portion to provide an integral one-piece structure for the frame structure. The frame structure is made of a dielectric material in order to obviate previously experienced electrical shorts to a conductive frame structure.

3,777,138

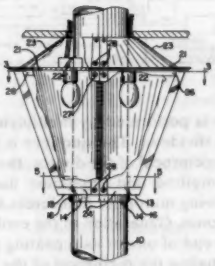
POST LANTERN FOR ATTACHMENT TO STRUCTURAL SUPPORT MEMBER

I. Harold Metzler, 3129 Garfield Ave., Highland, Ind.

Filed June 23, 1972, Ser. No. 265,578

Int. Cl. F21s *1/10*

U.S. Cl. 240—84 **5 Claims**



A post lantern for a structural support column fixed at one end to a base and at the other end to a support channel or the like. The lantern is formed with a housing including two symetrical sections. The sections each include complementary base sections provided with cut-outs which clampingly embrace the column. Each of the sections of the lantern includes upstanding corner posts, and connecting angles are used to secure the sections together and to clamp the lantern about the column. In house construction the lantern effectively disguises the appearance of an ordinary girder supporting post by converting it into an attractive decorative lamp.

3,777,139

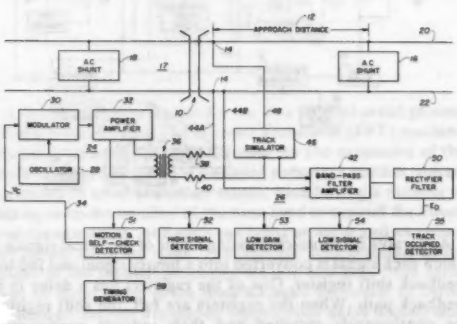
MOTION SENSOR SYSTEM

Richard V. Peel, 623 Greenhorn Dr., Diamond Bar, Calif.

Filed Dec. 3, 1970, Ser. No. 94,955

Int. Cl. B61l *1/06*

U.S. Cl. 246—125 **14 Claims**



A system for providing grade crossing protection by sensing the presence of trains exceeding a preselected velocity in an

approach track section defined by shunts across the rails. Detector circuits provide fail-safe protection from defects in the associated track section such as a broken rail or low ballast impedance between rails. A time-sharing self-test subsystem simulates an approaching high speed train by applying a fraction of a second test signal to the system every few seconds to monitor the operation of the overall system; and a low gain detector checks the gain of the system to assure that the train's speed is accurately measured.

3,777,140

DEVICE FOR PRODUCING X-RAY PICTURES OF TEMPOROMANDIBULAR JOINT

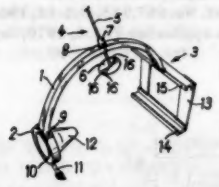
Hans Graf, Alte Landstrasse 98, 8803 Ruschlikon, Switzerland

Filed Aug. 11, 1971, Ser. No. 170,809

Claims priority, application Switzerland, Aug. 28, 1970, 1247/70

Int. Cl. G01n *23/04*

U.S. Cl. 250—490 **2 Claims**



An auxiliary device for producing dental X-ray pictures, comprising a bracket equipped with a film holder, and means for securing the bracket of the auxiliary device to the dental X-ray machine. The securing or attachment means is arranged at the bracket in a position opposite the film holder.

3,777,141

DEVICE FOR SECURING A FILM FOR DENTAL X-RAY TO A RIGHT-ANGLED FILM HOLDER AND AIMING ROD BY MEANS OF A RAY-PERMEABLE BITE BLOCK WITH FILM SUPPORT AND AN ANTAGONIST BITE PLATE

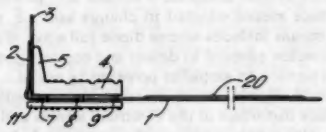
Svein Eggen, Weidemannsgate 6, 2600 Lillehammer, Norway

Filed July 10, 1972, Ser. No. 270,369

Claims priority, application Norway, Sept. 2, 1971, 3265/71

Int. Cl. G03b *17/26*

U.S. Cl. 250—521 **4 Claims**



A device for securing a film for dental X-ray in a right angle to a film holder and aiming rod.

3,777,142

HIGH RESOLUTION RADIOACTIVITY DISTRIBUTION DETECTION SYSTEM

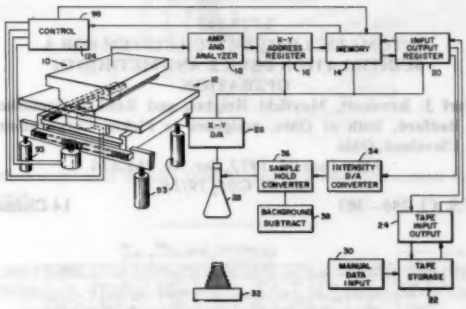
Raymond P. Grenier, Wilmington, Mass., and Earl B. Jacobson, Hoffman Estates, Ill., assignors to Baird-Atomic Inc., Bedford, Mass.

Filed July 8, 1971, Ser. No. 160,697

Int. Cl. G01t *1/20*

U.S. Cl. 250—327 **13 Claims**

Radiation emitted from a subject positioned on a programmable X,Y platform is detected by means of an array of sensing devices. The platform, which is in spaced relationship with the subject, is moved along its X and Y axes in incremental steps defining a programmed scanning pattern, each step being an integral multiple of the distance between adjacent sensing devices. The radioactive events, which are detected at each step, are temporarily held in a memory and then stored



on a recording medium. Upon completion of the programmed scanning sequence, the stored data which represents the radioactivity detected at each step is recalled from the recording medium and applied to a display via the memory for presentation as a combined pictorial representation of the detected radioactive events at each step.

3,777,143

WATER-BASE FLAW DETECTION METHOD

Dale D. Winans, 27115 Sunny Ridge Rd., Rolling Hills, Calif., and Amos G. Sherwin, 8330 Gainford St., Downey, Calif.

Filed Oct. 30, 1972, Ser. No. 302,284

Int. Cl. G01n *21/38*

U.S. Cl. 250—302 **6 Claims**

A method of detecting flaws in metallic and other insoluble surfaces which method utilizes a normally solid composition with coloring in a hot aqeuous solution. The hot aqueous solution is applied to the surface and upon drying solidifies. The surface coating is removed but the composition which has dried in surface openings and flaws is retained. The retained colored composition marks the location of surface discontinuities and, as it is a solidified composition, it is more resistant to over-removal, than the ordinary colored liquid composition now used, when the surface coating is being removed.

3,777,144

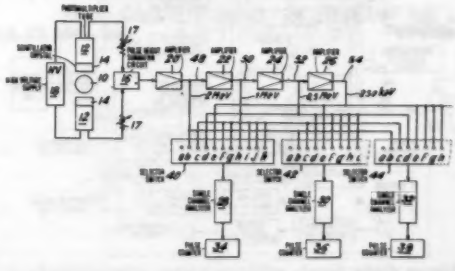
GAMMA SPECTROMETRY SYSTEM FOR SAMPLE ANALYSIS

Edward Rapkin, Short Hills, and Edward W. Thomas, Morris Plains, both of N.J., assignors to Intertechnique S.A., Plaisir, France

Filed Jan. 19, 1972, Ser. No. 218,969

Int. Cl. G01t *1/20, 7/00*

U.S. Cl. 250—366 **15 Claims**



A system for measuring the activities of gamma emitters of different energies in successive samples includes a transducer,

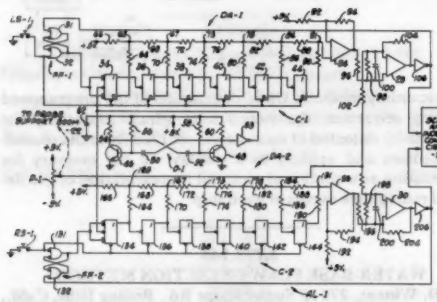
a plurality of linear amplifiers in cascade, and several single channel analyzers. Each single channel analyzer may be connected to the output of any one of the amplifiers by a switch which may also be used to select one of the several preset windows of the corresponding analyzer.

3,777,145

AUTOMATIC LIMIT SWITCH SYSTEM FOR A SCINTILLATION DEVICE AND METHOD OF OPERATION

Carl J. Brunnett, Mayfield Heights, and Basil N. Ioannou, Bedford, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed June 23, 1972, Ser. No. 265,624
Int. Cl. G01j *39/18*
U.S. Cl. 250—303 **14 Claims**



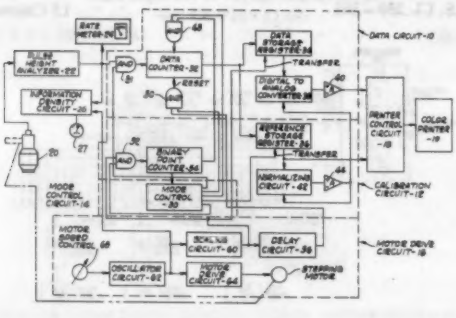
A scintillation scanner having an automatic limit switch system for setting the limits of travel of the radiation detection device which is carried by a scanning boom. The automatic limit switch system incorporates position responsive circuitry for developing a signal representative of the position of the boom, reference signal circuitry for developing a signal representative of a selected limit of travel of the boom, and comparator circuitry for comparing these signals in order to control the operation of a boom drive and indexing mechanism.

3,777,146

INFORMATION DENSITY SYSTEM FOR SCINTILLATION DEVICE AND METHOD OF OPERATION

Carl J. Brunnett, Mayfield Heights, and Basil N. Ioannou, Bedford, both of Ohio, assignors to Picker Corporation, Cleveland, Ohio

Filed June 23, 1972, Ser. No. 265,481
Int. Cl. G01t *39/18*
U.S. Cl. 250—369 **15 Claims**



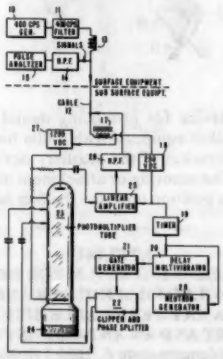
A scintillation scanner having an information density indicator system for counting the number of electrical pulses representative of radiation activity which occur during a predetermined increment of movement of a detection probe and dividing the number of counted pulses by a selected line spacing distance in order to provide direct indication of information density. The information density indicator system utilizes counting circuitry for counting the number of pulses which occur during a predetermined interval of time and scaling circuitry for scaling the number of pulses by a factor which is dependent upon a selected distance of line spacing. The system also incorporates storage circuitry and digital-to-analog conversion circuitry for storing and processing the signals for application to an indicator device.

3,777,147

GATED SPECTRAL WELL LOGGING RADIATION DETECTION SYSTEM AND METHOD

Wilmer A. Hoyer; Robert C. Rumble; Donald H. Britton, all of Houston, Tex., and John D. Ball, deceased, late of Lubbock, Tex. (by Verna D. Ball, executrix), assignors to Esso Production Research Company, Houston, Tex.

Division of Ser. No. 587,943, Oct. 14, 1966, Pat. No. 3,582,655. This application Feb. 5, 1970, Ser. No. 13,222
Int. Cl. G01v *5/00*
U.S. Cl. 250—264 **6 Claims**



A gamma ray well logging system comprising a gated gamma radiation detector system. The components of the gated detector system comprise a surface a.c. power source; first subsurface means adapted to change said a.c. power to d.c., which means includes silicon diode full wave rectifiers; a radiation detector adapted to detect and convert gamma rays to electrical signals; an amplifier powered by said d.c. adapted to amplify said signals, which means includes feedback circuits to reduce distortion of the electrical signals and produce a desired amplifier output impedance; means including a timer powered by said d.c. adapted to produce a positive pulse; means to shape said positive pulse and produce two pulses having amplitudes which produce minimum distortion and high on-off ratio of the radiation detector; and second subsurface means adapted to change said a.c. power source to other d.c. adapted to operate said detector.

3,777,148

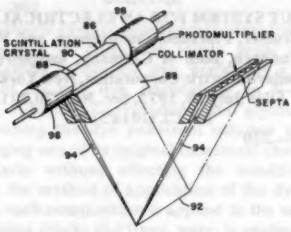
COLLIMATOR

Floro D. Miraldi, Cleveland Heights, Ohio, assignor to Case Western Reserve University, Cleveland, Ohio

Division of Ser. No. 48,166, June 22, 1970, Pat. No. 3,688,113. This application June 25, 1971, Ser. No. 156,926
Int. Cl. G21f *5/02*
U.S. Cl. 250—505 **2 Claims**

A collimator having a front and rear and a longitudinal axis passing from the front to the rear. Spaced septa between the

front and the rear defining openings and including a plurality of longitudinal sides parallel to the longitudinal axis and converging downwardly at different angles to form channels which converge to a single focal line. The septa further include spaced parallel sides transverse to the longitudinal axis and intersecting with the longitudinal sides. The parallel sides form transverse channels which are non-focusing along the focal line.



3,777,149

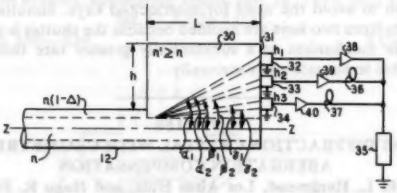
SIGNAL DETECTION AND DELAY EQUALIZATION IN OPTICAL FIBER TRANSMISSION SYSTEMS

Enrique Alfredo Jose Marcatili, Rumson, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1972, Ser. No. 272,371

Int. Cl. G02b *5/14*; H01p *3/12*

U.S. Cl. 250—209 **11 Claims**



A stripper at the end of an optical fiber selectively couples propagating signal components out of the fiber at characteristic angles. A linear array of photodetectors selectively responds to each of the coupled signal components or to groups of such components. When used simply as a mode or as a frequency separator, the detected signals are separately coupled to different output circuits. In a detector-equalizer embodiment, the signals, suitably delayed relative to each other, are coupled to a common output circuit.

3,777,150

MODE DETECTION AND DELAY EQUALIZATION IN MULTIMODE OPTICAL FIBER TRANSMISSION SYSTEMS

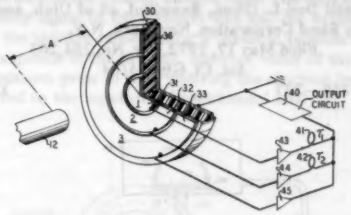
Stewart Edward Miller, Locust, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed July 17, 1972, Ser. No. 272,370

Int. Cl. G02b *5/14*; H01p *3/12*

U.S. Cl. 250—209 **10 Claims**

This application describes a detector-equalizer circuit for equalizing the dispersion produced in a multimode optical fiber. The circuit comprises an array of photodetectors whose physical configurations conform to the radiation pattern at the end of the optical fiber. The photodetectors selectively respond to each of the modes or to groups of modes propagating along the fiber. The several output signals thus produced are delayed an appropriate amount relative to each other, and then combined in time coincidence in a common output circuit.



3,777,151

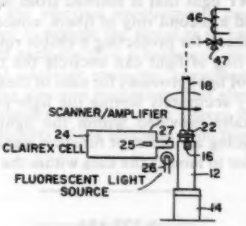
METHOD AND APPARATUS FOR SCANNING SURFACES

William L. Ortlieb, Uptown, Hoboken, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 685,543, Nov. 24, 1967, abandoned. This application Jan. 14, 1971, Ser. No. 106,586. The portion of the term of this patent subsequent to Oct. 13, 1980, has been disclaimed.

Int. Cl. G01n *21/30*

U.S. Cl. 250—201 **4 Claims**



A method and apparatus for photo-electrically scanning surfaces having a registration mark thereon capable of reflecting light signals. Means are provided for mounting the object having the surface to be scanned, and suitable drive means are provided for controlling movement of the surface. The area of the surface to be scanned containing the registration mark is bathed with light emanating from a light source such as a fluorescent lamp excited by a filtered direct current supply. A scanner amplifier picks up the reflected light from the registration mark and uses the resulting signal to control the motion of the surface being scanned.

3,777,152

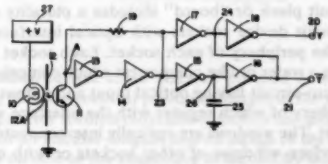
PHOTOTRANSISTOR BUFFER CIRCUIT

Adrian K. Dorsman, Bellflower, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed May 22, 1972, Ser. No. 255,507

Int. Cl. G01n *21/30*; H03b *1/00*; H03k *5/00*

U.S. Cl. 250—206 **10 Claims**



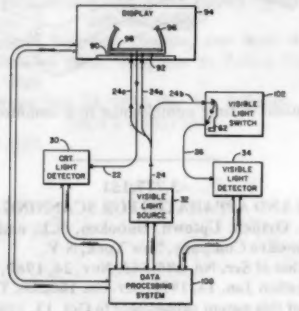
A phototransistor output amplifier circuit which provides noise rejection through positive feedback and generates complementary output pulses.

3,777,153

FIBER OPTICS LIGHT PEN

Brent F. Anderson; Charles W. Bytheway, both of Salt Lake City, and Don L. Olson, Bountiful, all of Utah, assignors to Sperry Rand Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,205
Int. Cl. G02b 5/14
U.S. Cl. 250—227 13 Claims



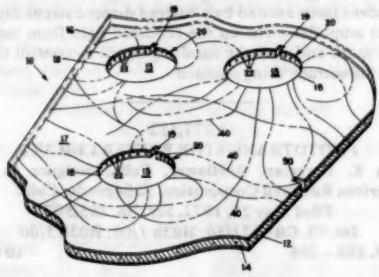
A light pen for operator interface with the cathode ray tube display of a data processing system is disclosed. The light pen incorporates two fiber optics bundles; a first circle of fibers for sensing the CRT light that is emitted from the display in the target area, and a second ring of fibers, concentric about the first circle of fibers, for projecting a visible ring of light on the display which ring of light can encircle the target area. The projected ring of light provides for ease of identification of the desired data by accurately aiming the light pen at the target area. Additionally provided within the light pen is a light switch for initiating an interrupt function signal that then permits the operator to modify the data within the target area.

3,777,154

OPTICAL DATA PROCESSING SYSTEM

Richard W. Lindsey, 501 Valencia Rd., Venice, Fla.

Filed Feb. 7, 1972, Ser. No. 224,164
Int. Cl. G02t 1/28
U.S. Cl. 250—227 14 Claims



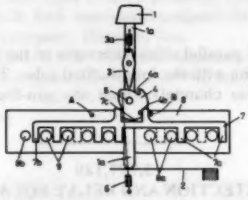
A circuit plane or "board" includes a plurality of optical-micro-circuit device sockets with optical interface windows around the periphery of each socket. Each socket is adapted to receive a wafer or like component which comprises an electrical micro-circuit having optical input and output devices at the periphery of which register with the interface windows of the socket. The windows are optically interconnected with optical interface windows of other sockets or with optical terminals along the edge of the "board" by means of optical fibers embedded in a potting material typically sandwiched between two thermally and electrically conductive plates. Operating power for the circuits is applied to the conductive plates to which the micro-circuits are electrically coupled. A plurality of circuit "boards" so formed can be stacked on one another and optically coupled by means of light transmitting end connectors including optical fibers therein to form a complete data processing system.

3,777,155

DATA INPUT SYSTEM FOR AN ELECTRICAL MACHINE

Bernhard Cramer, Pforzheim/Sonnenberg, and Wolfgang Andrich, Grunbach, both of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed July 10, 1972, Ser. No. 270,221
Int. Cl. G01d 5/34
U.S. Cl. 250—220 3 Claims



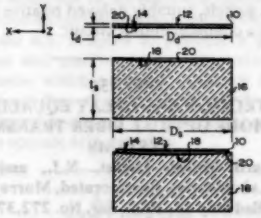
An input system for an electrical machine including a mechanism for connection between each key and a shutter therefor in the keyboard of the console of the machine. The shutter interrupts light from one or more sources to one or more photocells to provide a coded input for the machine. The shutter of each key is moved by the mechanism by a snap action to avoid the need for interlocked keys. Simultaneous inputs from two keys are avoided because the shutter is moved by the mechanism at a substantially greater rate than it is possible to actuate a key manually.

3,777,156

BENT DIFFRACTION CRYSTAL WITH GEOMETRICAL ABERRATION COMPENSATION

Donald L. Hammond, Los Altos Hills, and Hugo R. Fellner, Portola Valley, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 14, 1972, Ser. No. 225,977
Int. Cl. G01m 23/20
U.S. Cl. 250—227 8 Claims



A spherically bent diffraction crystal employed in an X-ray monochromator is provided with a nonuniform strain distribution to compensate for a geometrical aberration produced by nonconformity of the surface of the diffraction crystal to the Rowland circle of the monochromator.

3,777,157

WATER WASHABLE DYE PENETRANT COMPOSITION AND METHOD OF APPLICATION

Orlando G. Molina, Westminster, Calif., assignor to North American Rockwell Corporation, El Segundo, Calif.

Filed Jan. 24, 1973, Ser. No. 326,359
Int. Cl. G01n 21/16
U.S. Cl. 250—302 26 Claims

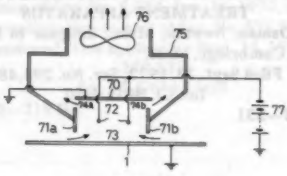
A water washable dye penetrant composition for use in nondestructive testing of objects to locate voids and defects therein, containing an organic dye, preferably a fluorescent dye, a solvent for said dye, particularly an N-alkyl-2-pyrrolidone, e.g. N-methyl-2-pyrrolidone, and glycol monobutyl ether for thinning the dye penetrant solution substantially without changing any of its original functional characteristics, and particularly without affecting the sensitivity of the penetrant. In the method of application of the dye penetrant composition, such composition is applied to the surface of an object containing cracks and flaws, water is applied to the surface of the object, preferentially removing the glycol monobutyl ether vehicle or carrier, and momentarily leaving the remaining dye penetrant uniformly distributed on the surface, which is finally washed off the part, both the removal of the glycol ether component and the remaining dye penetrant occurring in the same washing operation. The part is then inspected under appropriate lighting conditions such as fluorescent or black light, to obtain colored traces from the dye penetrant remaining in the cracks and flaws.

3,777,158

CORONA DISCHARGE DEVICE FOR ELECTROPHOTOGRAPHY

Nin-ichi Kamogawa; Haruo Fujii, and Tohru Uchida, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Jan. 13, 1972, Ser. No. 217,599
Claims priority, application Japan, Jan. 16, 1971, 46/758
Int. Cl. G03g 15/02
U.S. Cl. 250—324 2 Claims



Corona discharge devices for electrophotography, comprising means to control the flow of the ion wind (which is understood to be an air stream induced by ion flow) so as to exhaust the same through an opening other than that where the photosensitive paper is charged, and to prevent blowing of the ion wind against the paper. Alternatively means are provided for preventing the ion wind from flowing out of the charging opening.

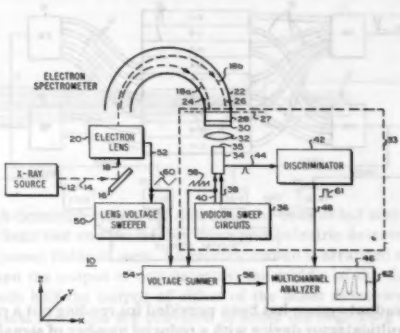
3,777,159

PARALLEL ENTRY DETECTOR SYSTEM

Donald L. Hammond, Los Altos Hills, and Charles E. Tyler, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo-Alto, Calif.

Continuation of Ser. No. 119,802, March 1, 1971, abandoned.
This application Nov. 9, 1972, Ser. No. 306,224
Int. Cl. G01t 1/36
U.S. Cl. 250—305 3 Claims

An imaging electron multiplier, a phosphor screen, and a vidicon camera tube are employed as a multichannel electron detector array at the output of an electron spectrometer. A sweep generator connected to an electron lens at the input of the spectrometer retards the incoming electrons in a controlled manner so that the electron energy spectrum is swept across the face of the imaging electron multiplier and, thus, across the face of the vidicon camera tube. The weighted sum of the sweep signal to the electron lens and the vertical scan signal to the vidicon camera tube is taken to provide a signal that corresponds to the original, unswept value of the energy of the electrons prior to their entering the electron lens. This signal is fed to the input of a multichannel analyzer. A pulse



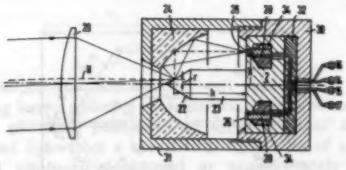
generated by the vidicon camera tube in response to each electron exiting the electron spectrometer causes the multichannel analyzer to sample the signal at its input. Thus, the original energy of each electron is measured and entered into the multichannel analyzer memory, regardless of where it struck the imaging electron multiplier. This eliminates distortion errors and scatter in the electron energy spectra caused by the nonrepeatability of the efficiency and noise of different detectors.

3,777,160

OPTICAL RADIATION DETECTING APPARATUS

Paul Bernt, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Feb. 9, 1972, Ser. No. 224,717
Claims priority, application Germany, Mar. 22, 1971, P 21 13 712.2
Int. Cl. G01j 1/02
U.S. Cl. 250—338 14 Claims



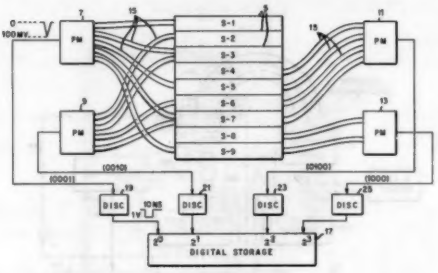
The invention relates to an infrared position detector for determining two-dimensional position changes of the radiator. Several ring-sector formed radiation detectors are arranged in the air gap of an annular magnet and an image of the radiator is produced on one of the respective detectors by means of a reflector serving as discriminator, as well as an elliptical mirror optic. Semiconductor detectors are used as radiation detectors. The position detector is suitable for long-wave radiation and has a very small time constant.

3,777,161

HODOSCOPE READOUT SYSTEM

Lap Yen Lee, Houston, Tex., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Nov. 8, 1972, Ser. No. 304,863
Int. Cl. G01j 39/18
U.S. Cl. 250—361 11 Claims



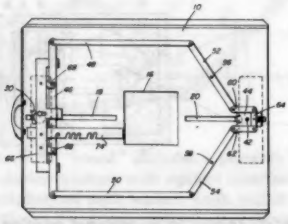
A readout system has been provided for reading out a radiation multidetector device with a reduced number of signal sensors. A radiation hodoscope, such as an array of scintillation counters, multiwire proportional counter array, or a set of multidetectors which do not receive signals simultaneously, is divided into equal numbered groups. A first group of signal terminals is connected to the equal numbered groups of detectors so that a signal from any one of the detectors of a group will be fed to an individual one of the first group of terminals. A second group of signal terminals is connected to the detector groups so that a signal from a particular numbered detector of each of the detector groups is connected to individual ones of the second group of terminals. Both groups of signal terminals are, in turn, coupled to signal sensors so that when a signal is simultaneously observed in one of the first group of terminals and one of the second group of terminals the specific detector detecting a radiation event is determined. The sensors are arranged in such a manner that a binary code is developed from their outputs which can be stored in a digital storage means according to the location of the event in the multidetector device.

3,777,162

CASSETTE LOCKING MECHANISM

Leonard F. Peyser, Briarcliff Manor, N.Y., assignor to The Machlett Laboratories, Incorporated, Springfield, Conn.

Filed May 18, 1972, Ser. No. 254,581
Int. Cl. G01b 41/16
U.S. Cl. 250—468 5 Claims



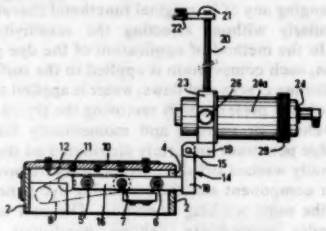
A positive functioning lock for retaining a film-bearing cassette in the Bucky tray utilized in X-ray systems, which lock efficiently clamps opposite sides of a cassette of any of the standardized sizes and locks the cassette firmly in position on the tray by means of a pin which engages a specific slot in a locking bar, which slot corresponds to the selected cassette size being used.

3,777,163

APPARATUS FOR SCANNING CHROMATOGRAMS AND THE LIKE

Guy Aubin, Saint Mande; Andre Abrioux, Drancy, and Jules Leroy, Vincennes, all of France, assignors to L'Oreal, Paris, France

Filed Jan. 21, 1972, Ser. No. 219,638
Claims priority, application France, Jan. 29, 1971, 7102994; Nov. 30, 1971, 7142935
Int. Cl. G01t 7/02
U.S. Cl. 250—491 24 Claims



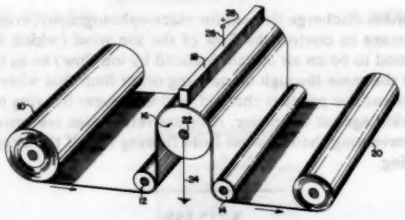
Apparatus for scanning chromatograms and the like comprise stationary magnetized table, magnetized means for holding a sheet on the table, and means responsive to a property of said chromatogram which varies from point to point thereon, said means, being mounted to move parallel to the top of the table.

3,777,164

ELECTRODE FOR SHEET MATERIAL SURFACE TREATMENT APPARATUS

Martin S. Osman, Newton, Mass., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sept. 29, 1972, Ser. No. 293,485
Int. Cl. B01k 1/00
U.S. Cl. 250—531 4 Claims



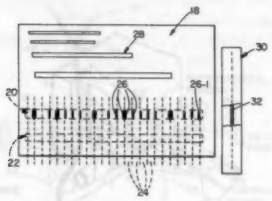
An improved electrode for use in apparatus for the treatment of the surface of a thin sheet of material includes an electrically conductive cylindrical core, a thin layer of dielectric material covering the cylindrical surface of the core, and an outer layer or sheath of electrically conductive material insulated from the core and completely surrounding the dielectric material. The electrode cooperates with one or more stationary electrodes in corona treatment apparatus to reduce the possibility of electrode arcing and to establish an electric field in the electrode gap with greater efficiency than the prior art.

3,777,165

SENSING APPARATUS

Jack A. Bryant, Boston, and Elihu Craig Thomson, Wellesley, both of Mass., assignors to Electronics Corporation of America, Cambridge, Mass.

Filed Mar. 31, 1972, Ser. No. 240,056
Int. Cl. G01n 21/30
U.S. Cl. 250—219 D 13 Claims



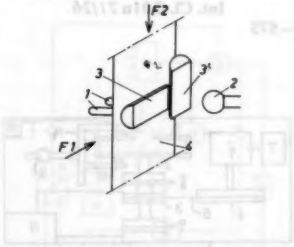
Scanning apparatus includes a linear array of sensors so that there is effectively a series of independent sensor elements disposed in aligned relation generally perpendicular to a scanning axis. Each sensor is arranged to provide a data output in response to a sensed code mark and an output channel is coupled to each sensor. Logic responsive to detection of a first code mark by a sensor of the array enables at least one code sensitive group of output channels and disables other output channels so that only a limited group of channels are rendered responsive to subsequently detected code marks.

3,777,166

CONTROL DEVICE FOR A MARK ON A CONTINUOUSLY MOVING BAND

Raymond Poupin, Fleury-les-Aubrais, France, assignor to Service D'Exploitation Industrielle Des Tabacs Et Des Allumettes, Paris, France

Continuation of Ser. No. 5,724, Jan. 26, 1970, abandoned, which is a continuation-in-part of Ser. No. 571,871, Aug. 11, 1966, abandoned. This application Sept. 15, 1972, Ser. No. 289,331
Int. Cl. G01n 21/30
U.S. Cl. 250—219 DR 1 Claim



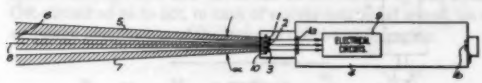
An arrangement for monitoring the presence, quality and location of markings on a moving band. Two photo-sensitive detectors are directed onto the moving band and provide a signal when a mark on the band passes beneath one of the detectors. The signal from the photosensitive detectors is processed for amplitude and frequency of occurrence. The amplitude processing determines whether the mark is of the desired quality and printed intensity, whereas proper location and spacing of the marking is determined from the pulse repetition frequency derived from the photosensitive detectors. A comparator monitors the pulse repetition frequency by comparing the pulse signal from the photosensitive detector with the pulse signal realized from a reference source.

3,777,167

DETECTING SYSTEMS

Richard Shepherd, Middlesborough, England, assignor to Decca Limited, London, England

Filed Nov. 29, 1971, Ser. No. 202,992
Claims priority, application Great Britain, Nov. 30, 1970, 56,678/70
Int. Cl. H01j 39/12
U.S. Cl. 250—219 WD 6 Claims



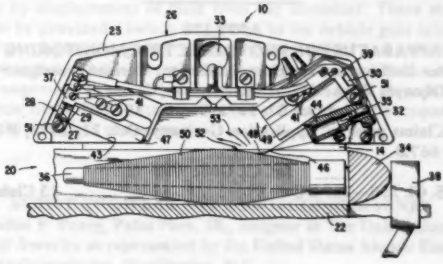
A detecting system for detecting the ends of hot steel billets. At least two and preferably three photoelectric detectors have adjacent fields of view. An electric circuit is arranged to signal when the output of one detector, the middle of the three, exceeds half the output of either of the other detectors. Other logical functions are provided to sense the beginning and end of a billet reliably.

3,777,168

PHOTOELECTRIC DETECTOR FOR BOBBIN OF A WEAVING LOOM

Eugene A. Sansone, Belle Meade, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,338
Int. Cl. D03d 45/12
U.S. Cl. 250—219 S 5 Claims



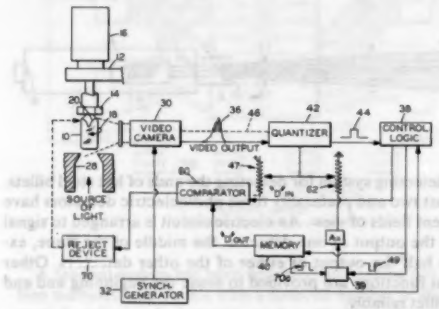
An improved photoelectric weft detector for fly-shuttle weaving looms utilizing photoelectric sensing means includes a first photocell positioned to sense specular and diffuse reflected light from a specified surface area of a bobbin, a second photocell positioned at approximately the same distance from the specified area of the bobbin to receive only diffuse reflected light and a third photocell mounted in proximity to the first photocell, which is adapted to receive both specular and diffuse reflected light and functions to inhibit the operation of the detector until the fly-shuttle is boxed. The photocells provide a voltage proportional to their resistance ratio for activiating a mechanism which replaces a bobbin upon exhaustion of the weft material. All of the photocells are provided with means for adjusting their distance to the specified area of the bobbin to increase their sensitivity to the light reflected therefrom.

3,777,169

METHOD AND MEANS FOR DETECTING FOREIGN PARTICLES IN LIQUID FILLED CONTAINERS

William H. Walter, East Granby, Conn., and Robert F. Mesnik, Yorktown Heights, N.Y., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Jan. 26, 1972, Ser. No. 221,008
Int. Cl. G06m 7/00; H04n 7/00
U.S. Cl. 250—218 10 Claims



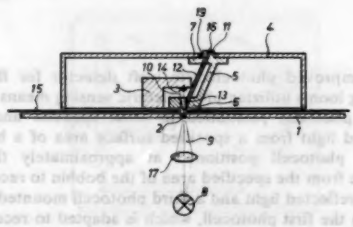
A liquid filled transparent container is spun momentarily and successive video frames are then taken by a camera while the liquid swirls in the stationary container. One or more of these video frames can be stored in memory in digitized form. Two or more digitized video frames are then compared electronically, by "subtracting" one from the other, to generate a reject signal when the "difference" exceeds some preset number of digitized pulses. The threshold voltage for the video frame being generated can be altered by reference to a stored video frame in order to increase the sensitivity of that frame at discrete points corresponding to voltages exceeding the threshold voltage in the stored frame and desensitized at all other points to reduce the liklihood of spurious signals.

3,777,170

APPARATUS FOR PHOTOELECTRIC MONITORING

Peter Hoffmann, Frankfurt-Sindlingen, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Oct. 21, 1971, Ser. No. 191,547
Claims priority, application Germany, Oct. 21, 1970, P 20 51 667.0
Int. Cl. G08c 9/06
U.S. Cl. 250—219 DC 13 Claims



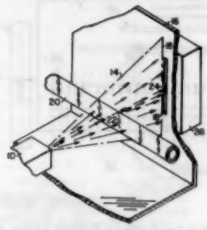
Apparatus for photoelectric scanning of perforated record members. The apparatus includes a light sensitive element and a light source. The light source projects a beam of light along a beam path toward the light sensitive element. A light deflecting member is provided for deflecting a portion of the beam of light from the beam path.

3,777,171

METHOD AND APPARATUS FOR DETECTING FLAWS IN CONTINUOUS LENGTH TUBULAR GLASS

Arthur J. Hollenbeck, Montclair, N.J., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed July 26, 1971, Ser. No. 166,097
Int. Cl. G01n 21/32
U.S. Cl. 250—219 S 4 Claims



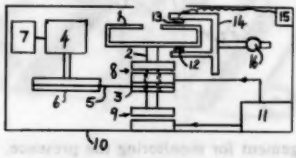
A method and apparatus for the detection of flaws caused by foreign matter and non-homogeneous bits of glass in the wall of continuous length tubular glass which comprises; directing a pair of narrow band high intensity laser beams, spaced 90° from each other about the axis of the glass tubing, through the tubing to impinge upon planar surfaces along a line immediately adjacent elongated slots in the planar surfaces. The passage of flow containing glass through the laser beams cause one or both of the beams to be deformed and fall on its adjacent slot to thereby activate a photocell positioned behind the slot and provide indicia of the presence and location of the flaw.

3,777,172

METHOD AND APPARATUS FOR MEASURING THE CLUMPING OF PLATELETS IN WHOLE BLOOD

Noel Clarke, Meadow Ct., Stillorgan Park, Blackrock, Ireland

Filed Oct. 29, 1971, Ser. No. 193,965
Claims priority, application Ireland, Oct. 29, 1970, 1382
Int. Cl. G01n 21/26
U.S. Cl. 250—575 21 Claims



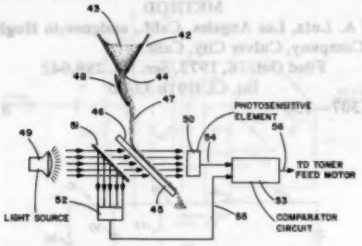
A method of measuring clumping of platelets in whole blood uses a centrifuge having at least one transparent treatment chamber, radiation sensing means for sensing light transmission through the chamber and agitation means giving a reproduceable amount, and number of cycles of, agitation to the contents of the or one chamber, a comparison being made between the measurement on an agitated and centrifuged test sample and the measurement on a centrifuged reference sample.

3,777,173

XEROGRAPHIC TONER CONCENTRATION MEASURING APPARATUS AND METHOD

James Edward Landrith, Wharton, N.J., assignor to Van Dyke Research, Whippany, N.J.

Filed Feb. 22, 1972, Ser. No. 227,978
Int. Cl. B05b 5/02
U.S. Cl. 250—575 17 Claims



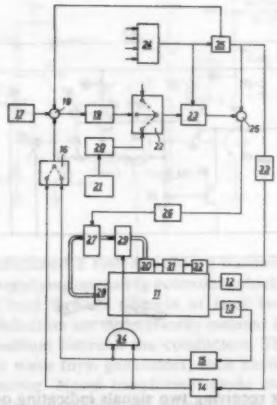
An arrangement for measuring the concentration of toner powder in a xerographic developer mixture by causing a sample of the developer to impinge upon a transparent plate. By providing the developer sample in the form of a turbulent stream, inclining the plate at the proper angle, and arranging the geometry of the measuring apparatus so that the stream impinges upon the transparent plate with the proper kinetic energy, a layer of toner powder is formed on the surface of a portion of the plate, the thickness of the toner layer increasing and decreasing with corresponding changes in the concentration of toner in the developer mixture. A photoelectric system is employed to monitor the light transmission of the toner-coated plate to provide a measure of toner concentration.

3,777,174

ELECTRONIC SPEED REGULATOR FOR INTERNAL COMBUSTION ENGINES

Franz Butscher, Eriskirch, and Werner Bader, Tettnang, both of Germany, assignors to Motoren- und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Germany

Filed Feb. 23, 1972, Ser. No. 228,685
Claims priority, application Germany, Mar. 2, 1971, P 21 09 693.5
Int. Cl. H02p 9/02
U.S. Cl. 290—40 17 Claims



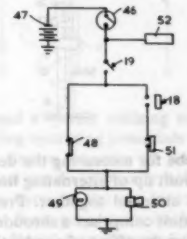
An electronic rotational speed control device for internal combustion engines of large power output with a desired-value adjustment for the rotational speed and filling of the internal combustion engine, a desired-actual-value comparison of the rotational speed, a control stage, an amplifier, and adjusting member with a servo-valve for the filling control which is provided with a motion pickup and a feedback; a pure rotational speed control stage with P-I-D behavior or a filling-rotational speed control stage can be selectively engaged while between the control stage and amplifier a filling-limit signal intended to limit the engine filling is compared with the filling-signal produced by the control stage whereby the respective smaller signal is transmitted to the amplifier; two measuring systems are provided for the rotational speed measurements which are utilized selectively for the supply of the rotational-speed existing-value and which can be connected by way of an OR-circuit so as to act, in case of excess rotational speed, on a stoppage mechanism of the internal combustion engine.

3,777,175

SAFETY ARRANGEMENTS FOR ROAD VEHICLES

Keith Lewis, and Robert Leonard Gleeson, both of Burnley, England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Apr. 11, 1972, Ser. No. 242,955
Int. Cl. H02g 3/00
U.S. Cl. 307—10 SB 7 Claims



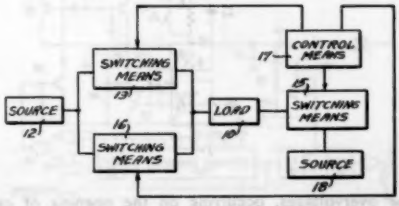
A safety arrangement for a road vehicle includes a means for detecting the presence of a passenger in a road vehicle comprising a flexible container within a passenger seat in the vehicle, and a fluid pressure operated electrical switch actuable by displacement of fluid from the container. There may also be provided a switch responsive to the vehicle gear selector mechanism, together with a warning device and switches associated with the driver's and passenger's safety harness, the arrangement being such that the warning device is actuated if a gear other than neutral is selected and harness for occupants of the vehicle is not secured.

3,777,176

ACTIVE CROWBAR FOR A SWITCHING MAGNET

Walter F. Praeg, Palos Park, Ill., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed July 5, 1972, Ser. No. 269,004
Int. Cl. H03k 3/00
U.S. Cl. 307—108 8 Claims



A first electrical source is connected to an electro-magnet by silicon-controlled rectifiers (SCR's) to produce a rapid rise

in current in the load. A second electrical source is then connected by SCR's to the load and the first is disconnected to produce a constant current in the load. A connection is then established to discharge the stored energy from the electromagnet, producing a rapid drop in current, and the second source is disconnected. The stored energy may be returned to the first electrical source.

3,777,177

STEP LEVEL PROBE

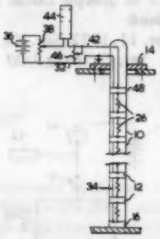
Alphonse A. Norkum, Box 86, Porcupine, Ontario, Canada; Joseph D. Corrigan, c/o Falconbridge Dominicana Corporation, Bonao, Dominican Republic, and Keith Davies, 308 Toke St., Timmins, Ontario, Canada

Filed Aug. 21, 1972, Ser. No. 282,008

Claims priority, application Canada, Oct. 6, 1971, 124560

Int. Cl. H01h *35/18*

U.S. Cl. 307—118 **14 Claims**



An elongated probe for measuring the depth of conductive liquids in a tank is built up of alternating hollow contact units and insulator units attached together. Preferably, for thick slurries the contact unit comprises a shrouded disc on an insulated arm so as to give the effect of conductive island surfaces spaced along the length of the probe, but away from its surface. The base of the hollow probe is preferably closed with a metal plug which can rest on the bottom of the tank. The probe construction is such that circuitry can be developed which will enable high and low level alarms to incorporated anti-splashing protection; a circuit to control liquid level by operating an inlet valve is also shown.

3,777,178

INTERRUPTER DEVICE FOR HIGH VOLTAGE DIRECT CURRENT

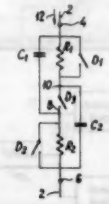
Jean Louis Gratzmuller, 66 Boulevard Maurice Barres, Neuilly, France

Filed Oct. 2, 1972, Ser. No. 294,293

Claims priority, application France, Sept. 30, 1971, 7135198

Int. Cl. H01h *9/42*

U.S. Cl. 307—136 **4 Claims**



The overvoltages, occurring on the opening of circuit-breakers, are limited by successively inserting a series of resistances into the line to be broken, the residual current, at the time of the final break, being transferred to capacitors. Each of the preliminary circuit-breaker (D_1 or D_2) is associated with a resistance (R_1 or R_2) to be inserted and with a capacitor (C_1 or C_2), each of said capacitors being connected at two points of the circuit which are situated one at each side of the associated preliminary circuit-breaker (D_1 or D_2) and the final circuit-breaker (D_3).

3,777,179

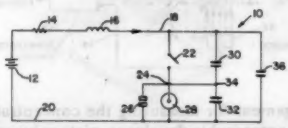
VOLTAGE-DIVIDING DC CIRCUIT BREAKER AND METHOD

Michael A. Lutz, Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Oct. 16, 1972, Ser. No. 298,042

Int. Cl. H01h *33/00*

U.S. Cl. 307—136 **8 Claims**



The voltage dividing DC circuit breaker comprises serially connected high voltage and low voltage switches to carry load current. Serial capacitors are connected in parallel thereto and a crossed field switching device is connected in parallel to the low voltage switch. When the low voltage and high voltage switches are opened, current is forced through the crossed field switching device. When the crossed field switching device is turned off, the arcing high voltage switch is forced below its chopping current. The open circuit voltage is divided across the capacitors.

3,777,180

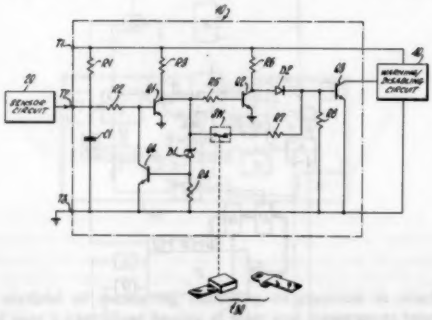
SIGNAL-SEQUENCE CONTROL CIRCUIT

Paul A. Carlson, New Providence, N.J., assignor to Wagner Electric Corporation, Newark, N.J.

Filed Apr. 27, 1972, Ser. No. 248,113

Int. Cl. H03k *19/08*, *19/32*; B60q *9/00*

U.S. Cl. 307—216 **10 Claims**



A circuit for receiving two signals indicating occupancy of an automobile seat and fastening of the associated seat belt, and operative to generate an output signal in response to either (1) the presence of only one signal or the other, or (2) the occurrence of both signals in an improper sequence.

3,777,181

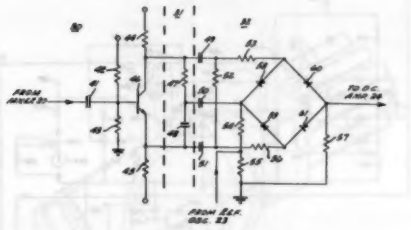
PHASE DISCATECTOR

Charles F. Bancroft, Sherman Oaks, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Division of Ser. No. 111,408, Feb. 1, 1971, abandoned. This application Apr. 27, 1972, Ser. No. 248,095

Int. Cl. H03k 5/20

U.S. Cl. 307—232 4 Claims



An improved circuit having both frequency discriminator and phase detector functions is disclosed. The circuit functions as a frequency discriminator for signals relatively far removed from a predetermined acquisition frequency range, thereby providing a coarse lock-on for acquisition. After acquisition the circuit functions as a phase detector for phase lock purposes. Thus, the discatector or dual function discriminator-phase detector eliminates the requirement for sweeping or presetting a voltage controlled oscillator when used in a phase lock loop wherein the open loop frequency drifts are larger than the acquisition range of the loop or where multiple channel operation is required.

3,777,182

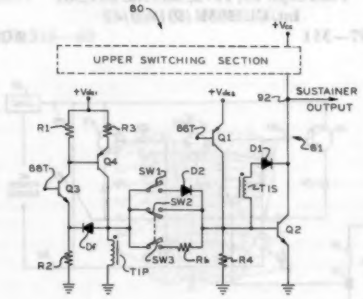
TRANSISTOR CONTROL APPARATUS

Edwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,348

Int. Cl. H03k 5/01

U.S. Cl. 307—268 26 Claims



There is disclosed a system utilizing transistor control apparatus for supplying operating potentials which is particularly useful with load devices wherein at least two transversely oriented conductors are dielectrically isolated from a gaseous discharge medium between the conductors. The invention is illustrated in wave form generators, each having at least one output transistor. Novel transformer-diode clamping means are provided to reverse bias the collector-base junctions of the output transistors, to bring deeply saturated transistors out of saturation and enable them to turn off much more rapidly than was possible heretofore. The system shown thus produces a more effective wave form having steeper leading and trailing edges, the wave form in the embodiment shown being used as a sustaining voltage for cells in a gas discharge display/memory panel. The basic concept of a transformer-diode clamping circuit is described and disclosed herein.

3,777,183

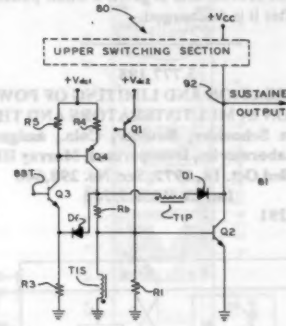
TRANSISTOR CONTROL APPARATUS

Erwin F. Peters, Maumee, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Dec. 8, 1972, Ser. No. 313,347

Int. Cl. H03k 5/01

U.S. Cl. 307—268 10 Claims



There is disclosed a system utilizing transistor control apparatus for supplying operating potentials which is particularly useful with load device wherein at least two transversely oriented conductors are dielectrically isolated from a gaseous discharge medium between the conductors. The invention is illustrated in wave form generators, each having at least one output transistor. Novel transformer-diode clamping means are provided which may automatically sense saturation of an output transistor and reverse bias the collector-base junctions of the output transistors, to bring deeply saturated transistors out of saturation and enable them to turn off much more rapidly than was possible heretofore, and to sense the driving current for the primary winding of the transformer to keep the output transistor biased near saturation. The system shown thus produces a more effective wave form having steeper leading and trailing edges, the wave form in the embodiment shown being used as a sustaining voltage for cells in a gas discharge display/memory panel.

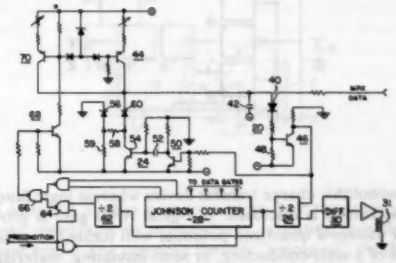
3,777,184

STABILIZED PULSE GENERATOR WITH VARIABLE OUTPUT

James A. Smith, Rochester, N.Y., assignor to Health-Tronics, Inc., Victor, N.Y.

Int. Cl. H03k 5/04, 3/35

U.S. Cl. 307—268 4 Claims



Each data channel includes signals defining two successive, approximately equal intervals thereby enabling reliable, error-

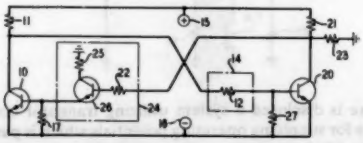
free signal transmission despite serious signal degradation due to limitations of the signalling medium. Typically, transmission is over ordinary telephone lines, which degrade sharply defined pulse signals from the transmitter almost to simple sine wave signals at the receiver. Modulation consists of variations in the sum of the two intervals, and the effects of distortion and degradation caused by the line are minimized. Frame synchronization is achieved by transmitting signals defining two intervals shorter than the shortest interval permitted in the data channel. The claims of this application are directed to the pulse generator of the transmitter, which includes a capacitor connected to be discharged through a programmable unijunction transistor. The capacitor is charged from a constant current source, and is given a small pedestal charge immediately after it is discharged.

3,777,185

MINIMIZATION AND LIMITING OF POWER DISSIPATION IN MULTIVIBRATORS AND THE LIKE

Herbert Anton Schneider, Boulder, Colo., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 18, 1972, Ser. No. 298,640
Int. Cl. H03k *3/286*
U.S. Cl. 307—291 **16 Claims**



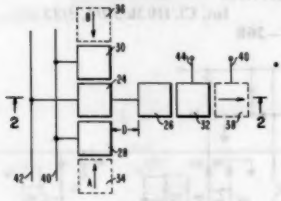
Power dissipation in multivibrators and other circuits having first and second cross-coupled transistors is minimized by providing base current for the first transistor from a potential intermediate the collector potential of the second transistor and the emitter potential of the first transistor. Further, power dissipation in conductive output transistors of such circuits is limited to a predetermined maximum value by monitoring each output transistor and maintaining it nonconductive unless the collector-emitter voltage thereof is less than the predetermined maximum.

3,777,186

CHARGE TRANSFER LOGIC DEVICE

Wen H. Chang, Essex Junction, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed July 3, 1972, Ser. No. 268,415
Int. Cl. H01d *11/14*
U.S. Cl. 307—304 **13 Claims**



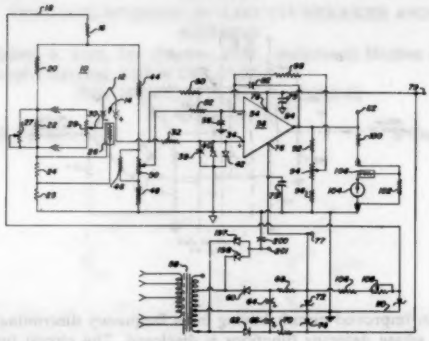
A monolithic charge transfer device wherein logic functions are performed is disclosed. A logical AND gate is provided which utilizes a quantized potential well formed in a surface region of a semi-conducting, or semi-insulating, material by a pattern of control electrodes. Various applications of the AND gate structure provide additional logical functions of Exclusive OR and Exclusive NOR gates.

3,777,187

CONTROLLER CIRCUIT

Mitchell I. Kohn, Chicago, Ill., assignor to Love Controls Corporation, Wheeling, Ill.

Filed May 1, 1972, Ser. No. 249,287
Int. Cl. H03k *5/20*; H01v *1/00*
U.S. Cl. 307—310 **11 Claims**



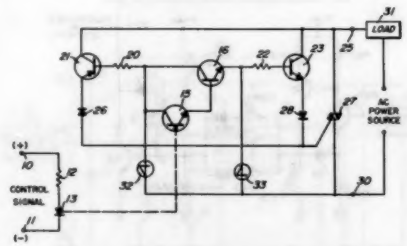
Temperature controllers including a sensing device, such as a thermocouple which is temperature compensated by means of a negative temperature coefficient resistance, and which generates a signal in response to the temperature of the thermocouple junction; an output circuit for manifesting a first output when a temperature limit is not exceeded and a second output when the limit is exceeded; a circuit which senses power interruption and forces the output circuit to manifest the first output for a limited time after the power is restored; and an alternative output circuit which provides a proportional controlling signal in response to the sensed temperature.

3,777,188

LIGHT SENSITIVE GATING OF TRIAL NEAR OR AT ZERO CROSSING POINT

Thomas Mazur, Scottsdale, Ariz., assignor to Motorola, Inc., Franklin Park, Ill.

Filed Sept. 15, 1972, Ser. No. 289,381
Int. Cl. H03k *19/14, 3/42*
U.S. Cl. 307—311 **8 Claims**



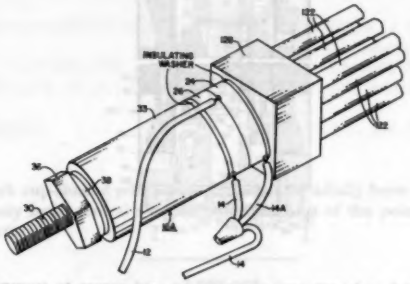
A light emitting diode is energized by a control voltage and light produced in response to the control voltage illuminates a photo-Darlington pair of transistors which provide a trigger to a triac connected in the load circuit to control current therethrough. Two unidirectional semiconductor switches are connected to the photo-Darlington pair in oppositely poled orientation so as to provide alternate current paths when voltage applied to the photo-Darlington pair exceeds a predetermined voltage in either polarity whereby the photo-Darlington pair is prevented from operating and producing a trigger for the triac.

3,777,189

ACOUSTIC ENERGY TRANSMISSION DEVICE

Dale D. Skinner, Turtle Creek; John H. Thompson, Pittsburgh, and Robert H. Whittaker, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 4, 1972, Ser. No. 250,395
Int. Cl. H01v 7/00
U.S. Cl. 310—8.3 6 Claims



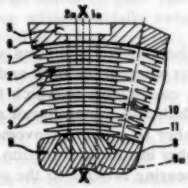
An apparatus for transmitting energy in the form of acoustic energy from one location to another, the energy being supplied at one location to the transmitting apparatus from an acoustic electric energy source through an electromechanical transducer and supplied at the other location by the transmitting apparatus to an electrical load through a second electromechanical transducer.

3,777,190

SUPERPOSED-STRIP FIELD WINDING FOR ROTARY ELECTRIC MACHINES

Jean C. Guimbal, 52, rue H. Dechaud, Saint-Etienne, France

Filed Sept. 22, 1971, Ser. No. 182,772
Claims priority, application France, Sept. 24, 1970, 7035597
Int. Cl. H02r 9/00
U.S. Cl. 310—60 7 Claims



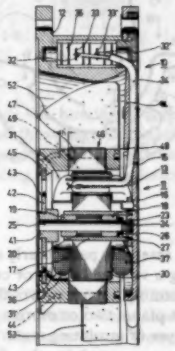
Channels for the circulation of cooling fluid are provided in field windings for rotary electrical machines by superposing conducting strips having edge portions arranged to form the cooling channels. In one form,the channels are formed by laterally offsetting alternate strips or groups of strips. In another form the channels are formed by alternate strips or groups of strips of different width. In still another form, edge portions of strips are of reduced thickness to provide the channels. Gaps between successive coils are kept uniform despite curvature of the rotor by varying the width of the strips.

3,777,191

DYNAMO ELECTRIC MACHINE CONSTRUCTION

Georg Papst, St. Georgen, Black Forest; Gunter Wrobel, Villingen, Black Forest, and Gerold Schneider, St. Georgen, all of Germany, assignors to Papst-Motoren KG, Schwarzwald, Germany

Filed Dec. 23, 1971, Ser. No. 211,538
Claims priority, application Germany, Jan. 8, 1971, P 21 00 663.3
Int. Cl. H02k 7/00
U.S. Cl. 310—67 24 Claims



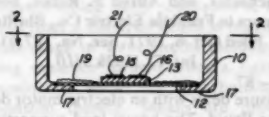
The rotor of a dynamo electric machine, one which is to be supported only at one end, is attached to the shaft by a disk-shaped steel element of circular outline which has outer marginal portions which are cast into the conductor portions of a squirrel cage rotor, the casting being, of aluminum for light weight and high conductivity; in a preferred form, the disk-shaped steel element is dished or bowed, and the marginal portions are bent-over, in contact with the magnetic elements of the rotor, or spaced therefrom by a distance sufficient to leave enough casting material adjacent the motor so that the resistivity of the short-circuited squirrel cage windings will be hardly increased by the presence of the steel element.

3,777,192

A METHOD FOR ADJUSTING THE RESONANT FREQUENCY AND MOTIONAL ELECTRICAL IMPEDANCE OF A VIBRATING DIAPHRAGM ELECTROACOUSTIC TRANSDUCER

Gilbert C. Barrow, Scituate, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Division of Ser. No. 79,219, Oct. 8, 1970. This application Mar. 20, 1972, Ser. No. 235,947
Int. Cl. H04r 17/00
U.S. Cl. 310—8.1 7 Claims



An operator applies a viscous paste over the surface of a clamped diaphragm in a transducer operating in a flexural resonant mode. The operator literally "paints on" the desired resonant frequency and impedance characteristic of the transducer. These characteristics are continuously monitored, on a suitable meter, while the operator is applying the paste.

3,777,193

RECTIFIER BRIDGE ASSEMBLY

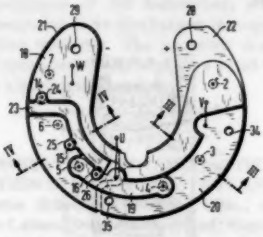
Hans-Friedrich Buehner, Pielmuhle, Germany, assignor to Siemens AG, Berlin and Munich, Germany

Filed Feb. 8, 1973, Ser. No. 330,885

Claims priority, application Germany, Feb. 24, 1972, P 22 08 794.1

Int. Cl. H02k 11/00

U.S. Cl. 310—68 D 12 Claims



A rectifier bridge assembly particularly suitable for use with an alternator having a voltage regulator controlled excitation winding, which assembly incudes two flat d.c. conductors lying in a single first plane, two or more a.c. conductors lying in a third plane, a layer of insulating material lying in a second plane, mechanically supported by the d.c. conductors and lying between the first and third planes, and two or more pairs of serially connected rectifiers arranged between the a.c. conductors and the d.c. conductors, one pole of the rectifiers in each pair of rectifiers being directly connected to one of the d.c. conductors and the other pole being directly connected to one of the a.c. conductors. A further d.c. conductor is disposed in the same plane as said a.c. conductors which further d.c. conductor is electrically insulated from the first mentioned d.c. conductors as well as from the a.c. conductors. The further d.c. conductor is directly connected to one pile of each of two or more further rectifiers and the other pole of each of the further rectifiers is directly connected to a diffeent one of the a.c. conductors. The said further conductor has a plurality of spaced tabs corresponding in number to the number of said a.c. conductors, which tabs extend out of the plane of said a.c. conductors to points respectively above the individual a.c. conductors. An excitation rectifier is directly mounted between said a.c. conductors and said ends of said tabs. The first mentioned rectifiers are mounted directly on one or the other of the first mentioned d.c. conductors within individual wells in the insulating layer. The further regulators are for use in the voltage regulator circuit of the excitation winding of the alternator. Instead of having the spaced tabs on the further conductors, the tabs may be on the a.c. conductors and extend above the further conductor.

3,777,194

SUBMERSIBLE MOTOR WITH PROTECTIVE END BELLS

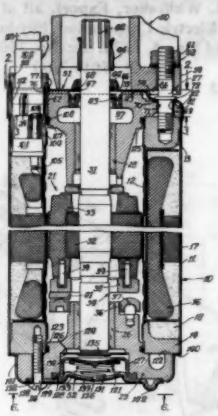
Edward J. Schaefer, and Alfred F. Refice, both of Bluffton, Ind., assignors to Franklin Electric Co., Bluffton, Ind.

Filed Oct. 6, 1971, Ser. No. 187,012

Int. Cl. H02k 5/10

U.S. Cl. 310—87 15 Claims

This disclosure deals with an electric motor designed for use in a corrosive liquid. The heavy load supporting parts at the ends of the motor are made of a strong but corrodable metal, and these parts are protected against corrosion by covers of a corrosion-resistant material. Holes are formed in one of the end parts and its cover to receive a power input connector, and a corrosion-resistant sleeve is mounted in the holes and around the connector to protect this end part against corrosion and also to anchor a plug of the connector. One cover has aligning portions formed thereon which are adapted to fit mating aligning portions of a mechanism such as a pump to be driven by the motor. The other cover both protects the associated end part against corrosion and serves to support a pressure-equalizing device of the motor.



3,777,195

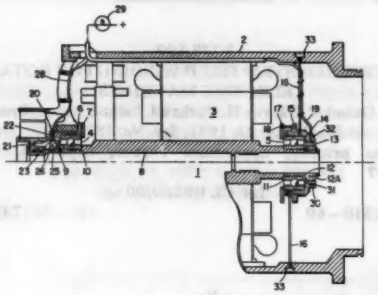
SUPPORT FOR GENERATOR BEARING

Frederick Milton Potter, Little Silver, N.J., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Feb. 8, 1972, Ser. No. 224,491

Int. Cl. B61f 17/00; F16c 35/00

U.S. Cl. 310—91 9 Claims



A support for a bearing for mounting a shaft for rotation relative to a member wherein the shaft and member have different temperature coefficients in which the bearing is supported firmly in a hub and a plurality of spokes support the hub from the member to prevent movement of the bearing relative to the member in a radial direction and permit limited movement of the bearing relative to the member in an axial direction to accommodate unequal changes in dimensions of the shaft and member due to temperature.

3,777,196

LOW-INERTIA SYNCHRONOUS INDUCTOR MOTOR

John H. Field, II, Needham, Mass., assignor to Sigma Instruments, Inc., Braintree, Mass.

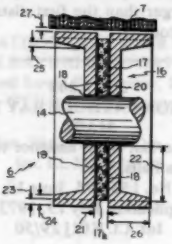
Filed Oct. 20, 1972, Ser. No. 299,407

Int. Cl. H02k 21/12

U.S. Cl. 310—156 7 Claims

The rotor structure of a synchronous inductor motor, such as a stepping motor, is of a compact, low-inertia and high-magnetic efficiency construction wherein a relatively thin axi-

ally-magnetized annular washer is fixed intermediate the wholly planar end surfaces of relatively lightweight back-to-



back cup-shaped pole pieces and extends radially from a relatively large central shaft fully to the roots of the pole-piece teeth.

3,777,197

ATTACHMENT ASSEMBLY FOR STATOR WINDINGS

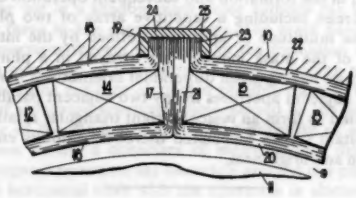
Thomas William Preston, Hednesford, and Albert Benjamin John Reece, Stafford, both of England, assignors to The English Electric Company Limited, London, England

Filed Jan. 3, 1973, Ser. No. 320,790

Claims priority, application Great Britain, Jan. 5, 1972, 521/72

Int. Cl. H02k *3/46*

U.S. Cl. 310—194 **17 Claims**



A dynamo electric machine which has a stator winding disposed in the rotor-stator air gap. The rotor winding comprises coils having straight axially extending side portions which are supported in trough members which have radially extending side walls the outer ends of which fit into slots in the stator core. The troughs may have cover plates also having side walls extending into the stator slots, and the troughs with the windings therein form a cylindrical structure in the air gap. This structure can be held in position closely adjacent the stator core by conformable packing or wedges associated with the side walls of the troughs and the stator slots.

3,777,198

INSULATED COIL FOR ARRANGEMENT IN A SLOT IN THE STATOR OR ROTOR OF AN ELECTRIC MACHINE

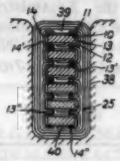
Anders R. Anderson, and Anders Bjorklund, both of Vasteras, Sweden, assignors to Allamanna Svenska Electriska Aktiebolaget, Vasteras, Sweden

Filed July 10, 1972, Ser. No. 270,440

Int. Cl. H02k *3/00*

U.S. Cl. 310—200 **15 Claims**

A coil positioned in the slot of a stator or rotor in an electric machine is formed of a bundle of conductors arranged close together and insulated from each other and from the slot. The conductor insulation consists of a layer of polymer and a tape of corona resistant insulating material running longitudinally of the conductor is adhered to the polymer layer. The tape surrounds the parts of the conductor facing the main insula-



tion which surrounds the bundle of conductors and furthermore overlies at least those parts of the sides of the conductors which face the adjacent conductors which parts are situated nearest the sides facing the main insulation.

3,777,199

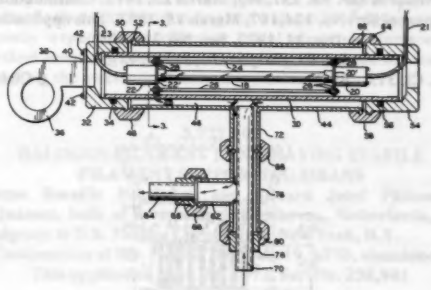
LIGHTING ARRANGEMENT

Noel Davis, Chagrin Falls, Ohio, assignor to Integrated Development & Manufacturing Company, Chagrin Falls, Ohio

Division of Ser. No. 30,662, April 22, 1970, Pat. No. 3,624,380. This application Sept. 27, 1971, Ser. No. 183,987

Int. Cl. H01j *61/52*

U.S. Cl. 313—27 **4 Claims**



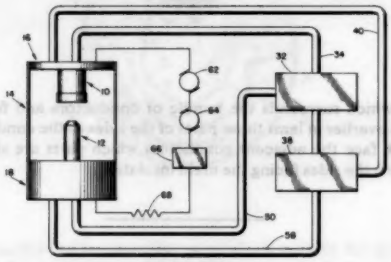
A lighting arrangement and lamp assembly particularly suitable for producing illumination with a minimum of the infrared range of wavelengths and especially suited for use in environmental growth chambers. The lamp assembly disclosed includes a tungsten-iodide lamp positioned in a first housing member formed from a material which is transparent to light of a substantial range of wavelengths including infrared. A second housing member formed from a light transmissive material is positioned about the first housing member in spaced relationship thereto. Means are provided to seal between the first and second housing members to provide a closed chamber through which illumination produced by the lamp must pass in order to escape from the assembly. Fan means function to pass cooling air through the first housing member and about the lamp positioned therein; and, means are provided for circulating water through the sealed chamber between the first and second housing members so that all the light passing from the assembly is filtered through the circulating water.

3,777,200

HIGH POWERED ARC ELECTRODES

Jesse H. Hall, Fairview Park; Clarence C. Gettelman, Westlake; John L. Pollack, North Olmsted, all of Ohio; Gary C. Goldman, Ann Arbor, Mich., and Arthur J. Decker, Lakewood, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 14, 1971, Ser. No. 143,508
Int. Cl. H01j 17/04
U.S. Cl. 313—32 13 Claims



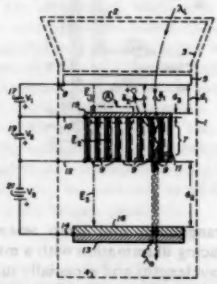
Nonconsumable metal electric arc electrodes capable of being operated in a variety of gases at various pressures, current, and powers. The cathode has a circular annulus tip to spread the emission area for improved cooling.

3,777,201

LIGHT AMPLIFIER TUBE HAVING AN ION AND LOW ENERGY ELECTRON TRAPPING MEANS

Bernard Caesar Einstein, Redwood Estates, Calif., assignor to Litton Systems, Inc., San Carlos, Calif.

Division of Ser. No. 237,343, March 23, 1972, Continuation-in-part of Ser. No. 124,107, March 15, 1971. This application Dec. 11, 1972, Ser. No. 314,105
Int. Cl. H01j 31/26, 31/50, 43/00
U.S. Cl. 313—65 R 6 Claims



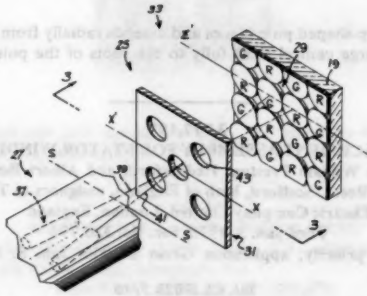
A light amplification device such as an image intensifier or low level sensing device is disclosed which includes a photocathode spaced from an aluminized target electrode and a microchannel plate intermediate said cathode and target. A thin non-self-supporting substantially optically transparent layer of material of a substance and thickness so as to be essentially transparent to high energy electrons, on the order of 100 to 1,000 electron volts, and light is situated atop the front end of the microchannel plate, covering the passages therein, in order to trap ions, which otherwise would travel to the photocathode, neutral gas ions, and to absorb scattered low energy electrons generated by secondary emission at the rim portion of the individual tubes in said microchannel plate, which would otherwise travel into the microchannel plate passages and to pass any light which passes through the photocathode and transmit any light which penetrates through the photocathode. The microchannel plate is spaced by a predetermined first distance from the photocathode, with its covered end facing the photocathode, and is spaced by a second distance, larger than the first distance, from the aluminized target electrode.

3,777,202

HIGH RESOLUTION CATHODE RAY TUBE SHADOW-MASK

Donald L. Say, Waterloo, N.Y., assignor to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Division of Ser. No. 153,695, June 16, 1971, Pat. No. 3,720,854. This application July 19, 1972, Ser. No. 273,158
Int. Cl. H01j 29/50
U.S. Cl. 313—85 S 3 Claims



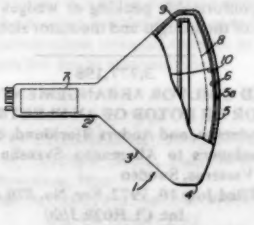
An improved aperture mask is provided for use in a two beam shadow mask type of color cathode ray tube. The mask is utilized in the formation and subsequent operation of a patterned screen including a repetitive array of two phosphor areas. The multitude of apertures defined by the interstitial webbing of the mask member are arrayed in a plurality of parallel rows having given directional orientations. Any three mutually adjacent apertures in any two adjacent parallel rows are oriented to form an isosceles right triangular relationship. The resultant screen associated therewith exhibits enhanced resolution and brightness.

3,777,203

COLOR PICTURE TUBE SHADOW MASK OF LOW CARBON SOFT STEEL

Junichi Yamada; Etuzo Terashima; Yasuji Takami; Kenji Fukuda, and Hiromitu Nakai, all of Mobara-shi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 11, 1972, Ser. No. 216,438
Int. Cl. H01j 29/06
U.S. Cl. 313—85 S 2 Claims



A color picture tube in which a color selective electrode is disposed in close proximity to a phosphor screen and is provided with a plurality of openings through which electron beams emanating from electron guns pass to impinge against

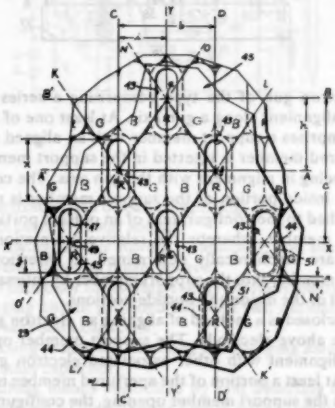
the phosphor dots. The color selective electrode is made of a plate of soft steel containing 0.002 to 0.012 percent by weight of carbon for minimizing the formation of undesirable projections on the side wall surface of the openings.

3,777,204

TRI-COLOR CATHODE RAY TUBE EMPLOYING A SHADOW MASK HAVING ELONGATED APERTURES

John D. Robbins, and Louis R. Wanner, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,514
Int. Cl. H01j 29/06
U.S. Cl. 313—85 S 13 Claims



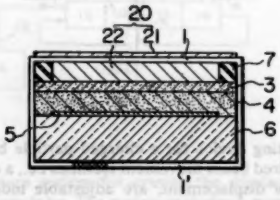
An improved aperture mask-screen combination is provided for use in a shadow mask color cathode ray tube employing three in-line electron beams. The mask having elongated apertures therein is utilized in the formation and subsequent operation of a patterned screen including repetitive arrays of three dot-type elongated phosphor areas. The multitude of elongated apertures, dimensioned by the interstitial webbing of the mask member, effect a display of enhanced brightness having a minimum of moire pattern distraction. The elongated apertures are discretely arrayed in a plurality of parallel horizontal rows with the apertures in alternate rows being aligned in similar columns.

3,777,205

METHOD FOR MAKING PHOTOELECTRIC DEVICE

Tadao Kohashi, Yokohama; Tadao Nakamura, and Shigeaki Nakamura, both of Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 794,677, Jan. 28, 1969, Pat. No. 3,616,003. This application July 6, 1971, Ser. No. 160,103
Claims priority, application Japan, Feb. 2, 1968, 43/6824
Int. Cl. H05b 33/06, 33/10, 33/12
U.S. Cl. 313—108 A 3 Claims



A method for manufacturing a photoelectric device having a plurality of photoconductive layers comprising the steps of forming on a surface of a semimanufactured article a layer of mixed suspension material consisting of powdery photoconductive material, binder material and volatile diluent, volatilizing said volatile diluent, repeating these steps to laminate the desired number of layers, and subjecting the laminated layers to a single heat treatment, thereby to set the photoconductive layers simultaneously.

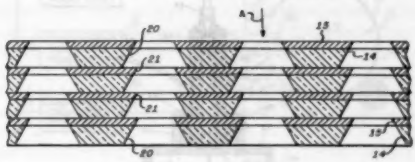
A photoelectric device including a spacer frame between the electrodes, said frame encircling at least one photoconductive layer.

3,777,206

ELECTRODES FOR GAS PLASMA DISPLAY PANELS AND METHOD OF MANUFACTURE THEREOF

James B. Armstrong, Phoenix, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 24, 1972, Ser. No. 237,722
Int. Cl. H01j 17/04, 61/30
U.S. Cl. 313—217 4 Claims



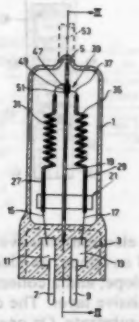
An electrode stack for gas plasma display panels comprises a plurality of dielectric plates each having tapered apertures therethrough. A metal film deposited on the surface of each plate that contains the narrow ends of the tapered apertures provides display electrodes, the film being deposited up to the peripheral edges of the apertures. The plates are stacked with respect to each other such that the surfaces of the plates containing the narrow ends of the apertures are adjacent to surfaces of other plates containing the wide ends of the apertures thereby exposing an effective metal electrode surface. A method involving a single-sided etching technique for manufacturing the electrode structure is disclosed.

3,777,207

HALOGEN FILAMENT LAMP HAVING STABILE FILAMENT SUPPORTING MEANS

Victor Rosallie Notelteirs, and Eduard Jozef Philomena Janssen, both of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Phillips Corporation, New York, N.Y.

Continuation of Ser. No. 12,780, Feb. 19, 1970, abandoned. This application Mar. 28, 1972, Ser. No. 238,941
Int. Cl. H01k 1/18
U.S. Cl. 313—222 2 Claims



A halogen filament lamp comprising an envelope having a pinch seal at one end and two series-arranged filaments within

the envelope coupled by a brace having at least end portions formed as mandrils which are screwed into the ends of the filaments remote from the pinch seal. The brace is fastened to a supporting wire projecting from the pinch seal.

3,777,208

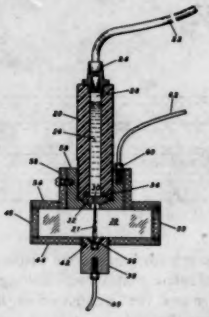
METHOD AND APPARATUS FOR PRODUCING RADIATION

Porter R. Ryason, San Anselmo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation-in-part of Ser. No. 608,245, Dec. 5, 1966, abandoned, which is a continuation-in-part of Ser. No. 263,830, March 8, 1963, abandoned. This application July 5, 1968, Ser. No. 747,044

Int. Cl. H01j *17/26, 61/28*

U.S. Cl. 313—231 **19 Claims**



The disclosure is of a method and apparatus for producing high energy radiation. A conducting liquid stream flowing between two electrodes is subjected to a large current pulse to cause the liquid stream to explode and produce radiation.

3,777,209

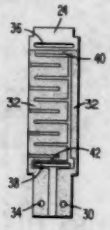
NON-THERMIONIC ELECTRON EMISSIVE TUBE COMPRISING A CERAMIC HEATER SUBSTRATE

Arthur Frederick McDonie; Richard Dale Faulkner, and James Lee Rhoads, all of Lancaster, Pa., assignors to RCA Corporation, New York, N.Y.

Filed May 17, 1972, Ser. No. 254,259

Int. Cl. H01j *1/13, 1/14, 19/06*

U.S. Cl. 313—238 **8 Claims**



A non-thermionic electron emissive tube of the type comprising an evacuated envelope, an electron emissive cathode assembly in the envelope, and a collector anode for electrons emitted from the emissive layer. The cathode assembly comprises a thin ceramic substrate. On one face of the substrate is a non-thermionic cathode. On the opposite surface is a heater pattern of resistive metallizing.

3,777,210

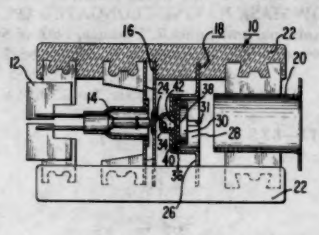
ELECTRON GUN AND METHOD OF ASSEMBLY

Richard Le Roy Spalding, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,219

Int. Cl. H01j *1/88, 19/42*

U.S. Cl. 313—256 **5 Claims**



An electron gun of the type comprising a series of electrodes in alignment along a gun axis. At least one of the electrodes comprises a support member with an aligned opening. An apertured member is inserted in the support member, the aperture being in alignment with the gun axis. The configuration of an inside portion of the support member is mechanically matched to the configuration of an outside portion of the apertured member, whereby the relative orientations of the members are mechanically determined on insertion of the apertured member into the support member by intimate physical contact of the inside and outside portions.

Also disclosed is a method of aligning an electron gun comprising the above electrode. The support member opening is fixed in alignment with other associated electron gun components. At least a portion of the apertured member is then inserted into the support member opening, the configurations of the members being such whereby an aperture in the apertured member is mechanically aligned along the gun axis by the inserting.

3,777,211

ADJUSTING DEVICE FOR A PARTICLE BEAM

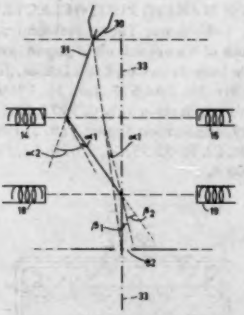
Wilhelmus Kuijpers, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 25, 1971, Ser. No. 174,887

Claims priority, application Netherlands, Aug. 27, 1970, 7012671

Int. Cl. H01j *29/70*

U.S. Cl. 315—31 R **9 Claims**

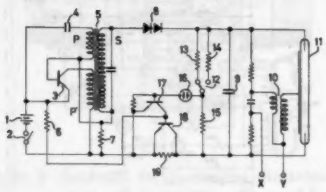


An adjusting device for a charged particle beam in which the two desired beam movement facilities i.e., a deflection and a transverse displacement, are adjustable independently of each other. This is realized by providing an adjustable coupling between each two deflector elements of two deflection systems which follow one another in the beam direction.

3,777,212
ELECTRONIC FLASH DEVICE

Yukio Mashimo, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed June 15, 1972, Ser. No. 262,998
Claims priority, application Japan, June 18, 1971, 46/4643842
Int. Cl. H05b 37/00
U.S. Cl. 315—241 P 8 Claims

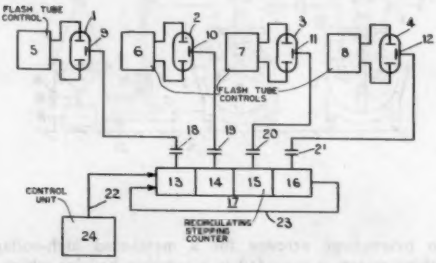


An electronic flash device comprising:
a direct current power source,
an oscillating device having a capacitor, and supplied with current from said power source,
a main capacitor for storing energy for flash illumination,
a charging circuit provided between said oscillating device and said main capacitor,
a detecting means for detecting the charging amount across the main capacitor,
a switching means controlled by said detecting means and connected to the charging circuit which opens to change the mode of oscillation of the oscillating device, and
a flashing tube connected to said main capacitor.

3,777,213
DARK TRACE CATHODE RAY TUBE ERASE SYSTEM

Harold Charles Arthur Hankins, Glosson, and Imad Shakir Torsun, Manchester, both of England, assignors to International Computers Limited, Putney, London, England

Filed Nov. 12, 1971, Ser. No. 198,224
Claims priority, application Great Britain, Feb. 20, 1970, 55,175/70
Int. Cl. H05b 41/36
U.S. Cl. 315—323 1 Claim

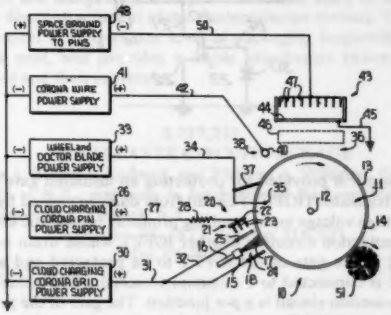


A flash erasure system for erasing the display on a dark trace cathode ray tube. The system includes a number of flash tubes wich can be selected for operation in a predetermined sequence. This mode of operation allows a cooling and charging period for each tube before it is required to be used again.

3,777,214
METHOD AND APPARATUS FOR ELECTROSTATICALLY CHARGING PARTICLES FOR PRINTING OR COATING

James R. A. Taylor, Chicago, and William A. Chambers, Harvey, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 787,977, Dec. 30, 1968, Pat. No. 3,635,157. This application Nov. 26, 1971, Ser. No. 202,373
Int. Cl. B41f 9/00; B05b 5/00
U.S. Cl. 317—3 6 Claims

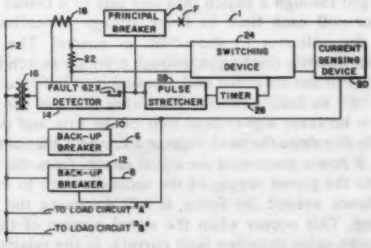

SPACE GROUND POWER SUPPLY TO PINS
CORONA WIRE POWER SUPPLY
WHEELand DOCTOR BLADE POWER SUPPLY
CLOUD CHARGING CORONA PIN POWER SUPPLY
CLOUD CHARGING CORONA GRID POWER SUPPLY

Provisions for electrostatically charging particles, as in an electrostatic printing operation, include a corona source for providing ionization in a predetermined region, a plate electrode spaced from the corona source, a grid electrode adjacent the corona source and spaced from the plate electrode and a nozzle for directing a flow of the finely divided particles intermediate the plate and grid electrodes. The grid electrode draws ions from the corona source into the region intermediate the plate and grid electrodes. A rotatable drum may be provided proximate the region of electrostatic charging of the particles to receive the particles on the surface thereof for transportation to a printing or application zone. Alternatively, a stencil screen may be provided proximate the region of charging of the particles to direct passage of the particles therethrough to define a desired image upon a substrate proximate the stencil screen.

3,777,215
BREAKER FAILURE RELAY DEVICE

Conrad M. D'Esopo, South Easton, Mass., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 2, 1972, Ser. No. 259,129
Int. Cl. H02h 3/00
U.S. Cl. 317—26 6 Claims

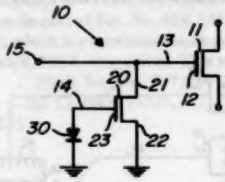


A device for sensing the failure of a principal breaker to interrupt the flow of fault current therethrough which is unaffected by the magnitude of the fault current to be interrupted.

3,777,216
AVALANCHE INJECTION INPUT PROTECTION CIRCUIT

William E. Armstrong, Tempe, Ariz., assignor to Motorola Inc., Franklin Park, Ill.

Filed Oct. 2, 1972, Ser. No. 294,407
Int. Cl. H02h 3/20
U.S. Cl. 317—31 4 Claims



A circuit is provided for protecting an insulated gate field-effect transistor (IGFET) circuit from damage caused by spurious, high voltage input resulting primarily from static charge. The protection circuit is another IGFET whose drain is connected to the gate of the IGFET to be protected and whose source is connected to a common terminal. Also included in the protection circuit is a p-n junction. The gate of the protection circuit IGFET is connected to the p-n junction whose other terminal is connected to the common terminal and which is connected to be reverse biased. The protection circuit IGFET goes into an avalanche condition when a spurious signal of a polarity to cause a reverse bias is of sufficient amplitude to start an injection of carriers from the drain to the gate. The avalanche condition is maintained until the drain voltage drops below the avalanche maintenance value, at which time the p-n junction permits the charge built up on the gate as a result of the avalanche, to leak to the substrate.

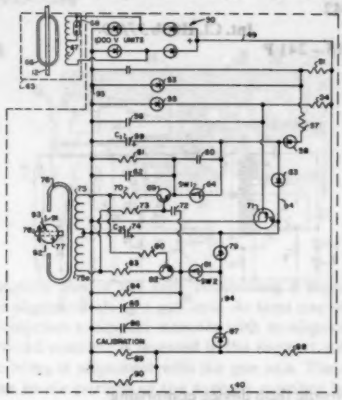
3,777,217
FAULT INDICATOR APPARATUS FOR FAULT LOCATION IN AN ELECTRICAL POWER DISTRIBUTION SYSTEM

Larry A. Groce, 2212-P E. Park Row, Arlington, Tex., and Darwin S. Renner, 1314 Cedar Hill Ave., Dallas, Tex.

Filed Jan. 10, 1972, Ser. No. 216,370
Int. Cl. H01h 47/32
U.S. Cl. 317—33 C 13 Claims

A current transformer is coupled to the cable to be monitored and furnishes both power and signal energy to the indicator apparatus. The power and signal energies are separated and the power regulated for constant performance over the entire operating current range. This range extends from the minimum no load cable current up through the highest fault amperes to be indicated. Two capacitors are charged by the power element. The first capacitor is discharged through a switch into one side of a center tapped indicator coil each time its firing voltage is reached. This causes the indicator to show "N" or normal. The second capacitor likewise discharges through a similar switch into the other side of the indicator coil, causing it to indicate the opposite, "F" or fault position. The firing point of the second switch is however higher than that of the first and does not normally fire since the peak voltage attained is that of the first switch. If now a portion of the signal energy from the input is added to the power supply of the second switch to make up the balance needed for firing, it will discharge the second capacitor. This occurs when the signal portion of the input rises to the value denoting fault current. In the relatively isolated instances when the second ("F") switch does fire it takes command and interrupts or prevents firing of the first. In series with each switch is a regeneratively connected transistor to return the switch to its initial or open position after each firing.

An added feature, for some uses, is a darlington device to rapidly dissipate power stored in the apparatus whenever the cable current goes to zero (or below minimum). This prevents

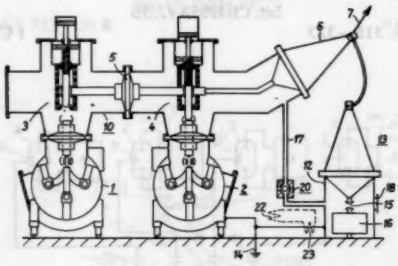


an "F" indication even in the presence of fault current, for some time interval after energy is resumed. This feature is optional.

3,777,218
METAL-CLAD HIGH-VOLTAGE SWITCHING SYSTEM

Claus Kessler, Berlin, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Sept. 18, 1972, Ser. No. 289,604
Claims priority, application Germany, Sept. 30, 1971, P 21 49 435.9
Int. Cl. H02h 1/00
U.S. Cl. 317—59 7 Claims



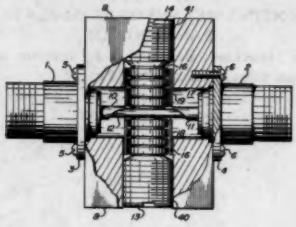
An overvoltage arrester for a metal-clad high-voltage switching system is provided in a separate housing which is filled with an insulating heavy gas. The separate housing contains a spark gap arranged in a heavy gas atmosphere which is the same as the insulating heavy gas filled within the metal encapsulation for the switching system. The separate housing is connected with the encapsulation via a valve-controlled gas line. The overvoltage arrester is particularly well suited for metal-clad high-voltage switching systems that are insulated by sulfur hexafluoride.

3,777,219

ELECTROMAGNETIC PULSE SUPPRESSOR

Richard D. Winters, Tempe, Ariz., assignor to General Semiconductor Industries, Inc., Tempe, Ariz.

Filed Aug. 14, 1972, Ser. No. 272,355
Int. Cl. H02h 3/22
U.S. Cl. 317—61.5 10 Claims



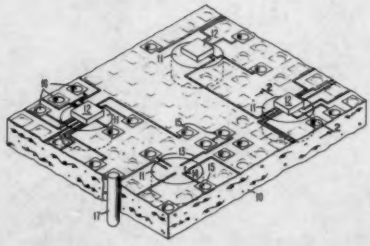
Apparatus is disclosed for protecting electronic circuitry against the damaging and destructive effects of fast rise time electromagnetic pulses. The apparatus is inserted between two coaxial cables, where the coaxial cables are used to interconnect electronic equipment. The housing of the apparatus electrically interconnects the sheaths of the coaxial cables and includes a central cavity having a solid conductor extending therethrough. The solid conductor provides an electrical path between the central conductors of the two coaxial cables. Protective devices, of the silicon junction avalanche type, fit within the cavity. These protective devices, or suppressors, are characterized by their small size, usually small discs, and their short duration, large current handling capability. One side of these discs is physically and electrically secured to the solid conductor while the other side is physically and electrically secured to the housing by a threaded element, such as a bolt. A plurality of serially connected discs may be used by stacking the discs within the cavity so that one side of the stack is adjacent the solid conductor with the bolt engaging the other side of the stack. The absence of leads in the above-described structure minimizes the inductive effects of the apparatus. In operation, a rapid potential increase on the central conductor, such as might occur due to an induced electromagnetic pulse, is dissipated through the one or more discs and thereby the discs suppress the damaging or destructive effect of the accompanying large current increase on the central conductor within the coaxial cables.

3,777,220

CIRCUIT PANEL AND METHOD OF CONSTRUCTION

Philip A. Tatusko, Endwell, and Richard A. Williams, Candor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 30, 1972, Ser. No. 267,825
Int. Cl. H05k 1/04
U.S. Cl. 317—101 A 14 Claims



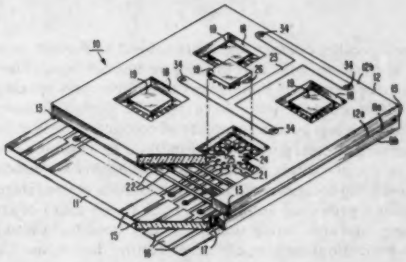
A hybrid circuit panel formed of both organic and inorganic materials to provide discrete areas of panel surface having different coefficients of expansion thereby providing mounting sites for semiconductor devices which have a coefficient of expansion approximating the semiconductor device. A construction method is disclosed in which previously formed inorganic substrates are placed in openings of semi-cured organic polymeric material containing inorganic fibers. The composite is compressed under heat and pressure to cause limited flow of the organic material and subsequent curing to thereby grip the inserted inorganic substrates. The organic substrate can be formed of a single layer of curable resin or a plurality of sheets of semi-cured resin laid up to form a composite panel. Conventional printed circuit techniques of either the subtractive or additive processes are used to form conductors on the surface of the inorganic and organic materials alike to thereby allow direct attachment of the semiconductor devices. This arrangement eliminates one level of packaging frequently used in the past, and provides a stable attachment between the devices and their substrates.

3,777,221

MULTI-LAYER CIRCUIT PACKAGE

Philip A. Tatusko, Endwell, and Richard A. Williams, Candor, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1972, Ser. No. 316,327
Int. Cl. H05k 5/00
U.S. Cl. 317—101 CP 13 Claims



A pair of planar, inorganic substrates, each having generally parallel signal lines formed on a major surface, are oriented so that the circuit bearing surfaces face each other in spaced parallel relationship with the circuit lines of the two signal planes being orthogonally arranged with respect to each other and joined at selected crossover points. One substrate has circuit lines on its signal plane connected with land areas to which integrated circuit chips are attached, and the other substrate is smaller with portions cut out to expose the attached circuit chips. Circuit tabs permit edge connection to one substrate and provision is made for circuit changes adjacent the chip attachment sites. The non-adjacent major surfaces of the two substrates are optionally used as ground and voltage planes.

3,777,222

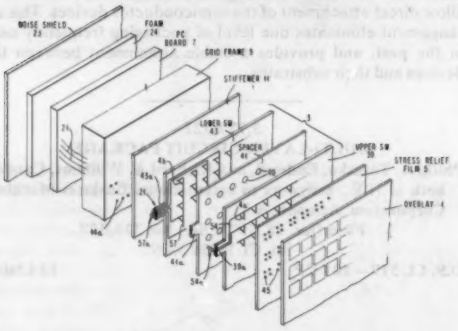
MODULAR TOUCH SENSITIVE INDICATING PANELS WITH TOUCH AND LIGHT TRANSMISSIVE OVERLAY COVER MEMBRANE CONTAINING VISIBLE PRINTED INDICIA

Thomas J. Harris, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 12, 1972, Ser. No. 252,822
Int. Cl. H02b 1/04; G06c 7/02
U.S. Cl. 317—112 36 Claims

Presently described touch sensitive indicating panels have thin but durably constructed plastic overlay membranes serving to: (a) transmit touch actuation pressure to underlying elastic diaphragm switch contacts arrayed at selected points of a pre-dimensioned grid; (b) transmit rear projection light indi-

cations received through spaces between switch grid conductors from suitably positioned light sources; (c) transmit alphanumeric light indications from suitably located arrays of light sources; (d) allow viewing of fixed information behind panels through suitably located areas; (e) display permanent indicia of artwork and nomenclature designating touch sensing and rear projection sites and functions; and (f) complete a housing enclosure. Panels for various host systems (e.g. computers, peripheral terminals, etc.) are assembled in various shapes and function types from a limited inventory of modular touch switches and control circuits. In the switch modules crossed grids of spaced conductors, which are prefabricated on transparent flexible support films, have pairs of



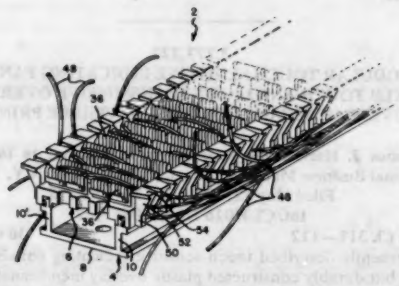
spaced parallel contact segments subject to flexure into contact at positions offset from the grid intersections. The grids have predetermined dimensions of intersection spacing and the offset contact pairs have specific design features for enhanced integrity and reliability of contact operation. Modular sensing circuits perform the functions of: scanning contacts of the panel switch modules for touch closure conditions; representing locations of closure conditions at predetermined locations; providing audible feedback (beep tone) of contact sensing, and translating sensed contact conditions into panel light indications and/or electrical control functions. Various arrangements are described for producing complex control and indicating effects based upon combinational sensing of particular contact sequences.

3,777,223

MODULAR ELECTRICAL JUNCTION AND INTERCONNECTION MEANS WITH SUPPORTING MEANS FOR TERMINAL BLOCKS

William Bruce Chandler, and George Halls Foster, Jr., both of Winston-Salem, N.C., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Sept. 26, 1972, Ser. No. 292,466
Int. Cl. H01r 9/22; H02b 1/04
U.S. Cl. 317—118 **4 Claims**



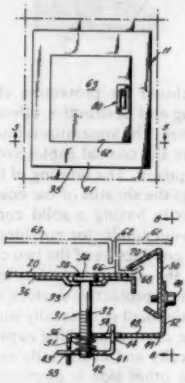
Electrical junction means for interconnecting a multiplicity of wires comprises a channel-shaped frame member having a plurality of mounting blocks secured thereto. Electrical terminals mounted on the mounting blocks provide interconnections among wires extending to the junction zone. The individual mounting blocks are removably secured to the frame in predetermined locations by means of latch arms and keys in the mounting blocks.

3,777,224

MOUNTING MEANS FOR TRIM PLATE OF PANELBOARD

James Frank Meacham, Bellmar, N.J., assignor to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 5, 1972, Ser. No. 286,143
Int. Cl. H02b 1/04
U.S. Cl. 317—120 **13 Claims**



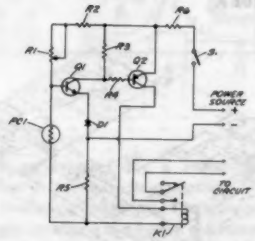
A panelboard is provided with a lightweight trim plate mounted by means that are totally concealed when the cover of the trim plate is closed. This mounting means includes deflectable rails mounted to the panelboard enclosure and having hook-like formations which snap behind cooperating hook-like stiffening ribs of the trim plate to mount the latter to the enclosure. Adjusting means for operating the rails to a clamping position are concealed when the trim plate door is closed.

3,777,225

LOW POWER LIGHT CONTROLLED SWITCHING DEVICE

Lester A. Dixon, 5731 Castle Dr., Huntington Beach, Calif.

Filed Apr. 24, 1972, Ser. No. 246,991
Int. Cl. H01h 47/24; H05b 37/02, 39/04
U.S. Cl. 317—130 **9 Claims**



A low current photosensitive sensing arrangement is exposed to a light environment. If light conditions cause the light level to increase above a preselected intensity, the arrange-

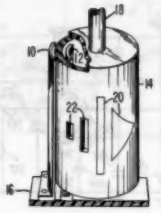
ment operates automatically to activate the electronic circuits attached thereto. If the light level decreases below the preselected intensity, the arrangement automatically deactivates the electronic circuits attached thereto.

3,777,226

PROGRAMMABLY VARIABLE CAPACITOR FOR USE IN A CAPACITIVE FUNCTION GENERATOR

Zong-Shyong Luo, Plymouth, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Oct. 2, 1972, Ser. No. 294,351
Int. Cl. H01g 5/01
U.S. Cl. 317—249 R 4 Claims



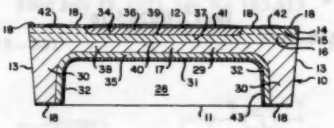
A programmably variable capacitor is provided having capacitive values which vary as functionally determined by preselected variations in the physical properties of a dielectric which is translatable along a path central to plates of the capacitor, the capacitive variations providing, when a fixed electric potential is applied across a series circuit including the capacitor and a resistor, a variation in the electric current flow which is representative of the capacitive value of the capacitor.

3,777,227

DOUBLE DIFFUSED HIGH VOLTAGE, HIGH CURRENT NPN TRANSISTOR

Surinder Krishna, Greensburg, and John R. Davis, Jr., Export, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Aug. 21, 1972, Ser. No. 282,624
Int. Cl. H011 5/00
U.S. Cl. 317—235 R 4 Claims



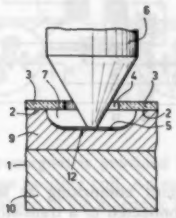
An NPN transistor with high voltage and high current capacities is provided in a semiconductor body having a thin internal portion and a thick integral peripheral portion. The thin portion has a substantially uniform width of greater than about 28 microns and oppositely facing surface areas each of greater than about 0.10 cm^2. The thick peripheral portion has a width greater than about 150 microns and annular dimension i.e. radial width greater than 10 microns. The base region has two contiguous impurity portions. A first impurity portion adjoins a major, preferably planar surface of the semiconductor body at the peripheral portion and has an impurity concentration of boron of at least 1×10^{19} atoms per cubic centimeter at the surface and a steep impurity concentration gradient to provide good ohmic and thermal properties. A second contiguous impurity portion is in internal portions of the body between emitter and collector regions and has a lower impurity concentration of gallium and/or aluminum and shallower impurity concentration gradient than the first impurity portion. Preferably, first and second impurity portions of the base region are formed by the simultaneous diffusion of boron and gallium and/or aluminum.

3,777,228

SCHOTTKY JUNCTION IN A CAVITY

Teunis Willem Van Steenbergen, Hilversum, and Jan Arie Gerrit De Waal, Emmasingel, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 14, 1969, Ser. No. 876,758
Claims priority, application Netherlands, Nov. 19, 1968, 6816449
Int. Cl. H011 11/00, 15/00
U.S. Cl. 317—235 R 4 Claims



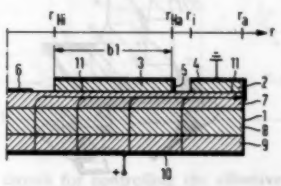
The invention relates to a method of manufacturing a semiconductor device having a schottky junction, for example, a schottky diode, in which a masking layer which is provided with a window is provided on a semiconductor body and at the area of the window a cavity extending to below the masking layer is provided in but not through said semiconductor body, the schottky electrode layer which extends to below the masking layer but not up to the masking layer being provided in said cavity by vapour-deposition or sputtering. The invention also relates to a semiconductor device manufactured by said method. A pressure contact is preferably provided on the schottky electrode layer.

3,777,229

THYRISTOR WITH AUXILIARY EMITTER WHICH TRIGGERS FIRST

Joachim Burtscher; Karl Peter Frohmader; Alfred Porst, and Peter Voss, all of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Aug. 1, 1972, Ser. No. 277,072
Claims priority, application Germany, Aug. 6, 1971, P 21 39 559.5
Int. Cl. H011 11/00, 15/00
U.S. Cl. 317—235 R 6 Claims



A thyristor having an auxiliary emitter located between the main emitter and the trigger or gate electrode, the auxiliary emitter being broader in its cross-sectional radial width than about 1 mm so that destructive breakdown of the main thyristor is prevented.

3,777,230

SEMICONDUCTOR DEVICE WITH ISOLATED CIRCUIT ELEMENTS

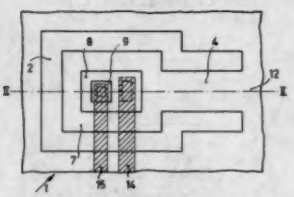
Claude Jan Principe Frederic Le Can, and Walter Steinmaier, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 153,590, June 16, 1971, abandoned. This application Feb. 5, 1973, Ser. No. 329,846

Claims priority, application Netherlands, June 20, 1970, 7009091

Int. Cl. H01l *19/00*

U.S. Cl. 317—235 R 11 Claims



An integrated circuit comprising at least an insulated transistor which is connected to a transistor, the circuit elements being provided in a surface layer of a semiconductor device which is present on a base layer or substrate of the same one conductivity type and has a lower resistivity. The insulated transistor is present within a cup-shaped insulation zone of the opposite conductivity type. The said resistor is at least partly formed by the lateral resistor in the surface layer between the active part of the transistor and an aperture in the insulation zone through which the resistor is electrically connected to the substrate.

3,777,231

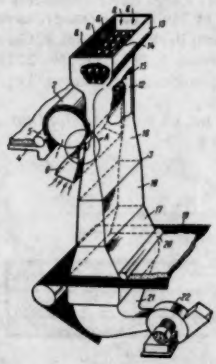
DEVICE FOR FORMING A LAYER OF FIBROUS MATERIAL OF HOMOGENEOUS STRUCTURE

Alexandr Evgenievich Guschin, Kovensky prospekt 13, Leningrad, U.S.S.R.

Filed Sept. 27, 1972, Ser. No. 292,829

Int. Cl. B29j *1/00*; H05f *3/06*

U.S. Cl. 317—262 R 2 Claims



In the device, provision is made for an electrostatic neutralizer for charged fibres, said neutralizer being installed at the inlet of a wind tunnel, whereas a slit-type jet nozzle is installed at the place where a serrated drum ajoins the wind tunnel, said nozzle extending along the entire length of the drum to deliver air to the zone of fibres removal from the serrated drum.

ERRATUM

For Class 317—234 see:
Patent No. 3,777,238

3,777,232

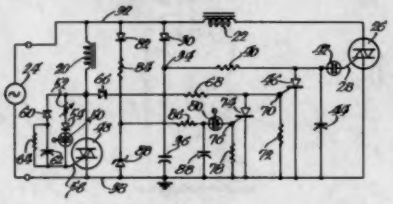
MOTOR START WINDING SWITCH CONTROLLED BY PHASE OF MAIN WINDING CURRENT

Richard E. Woods, Markle, and William H. Hohman, Bluffton, both of Ind., assignors to Franklin Electric Co., Inc., Bluffton, Ind.

Filed Sept. 6, 1972, Ser. No. 286,761

Int. Cl. H02p *1/44*

U.S. Cl. 318—221 E 35 Claims



In a motor circuit for an AC motor having a main winding and a start winding, a control circuit utilizes a change in phase between the start winding current relative to the phase of another motor circuit signal to remove a trigger signal from a thyristor in series with the start winding in order to remove power from the start winding when the motor reaches a preselected cut-out speed. In one embodiment a change with motor speed of the relative phase between the main winding current and the applied voltage is utilized. Another embodiment utilizes the change with motor speed of the relative phase between the main winding current and the start winding current.

3,777,233

METHOD AND DEVICE FOR DETERMINING THE SPEED OF A MEMBER

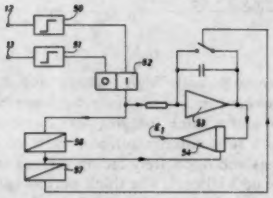
Luc Yves Natens, Berchem, Belgium, assignor to Agfa-Gevaert N.V., Mortsel, Belgium

Filed Oct. 22, 1971, Ser. No. 191,850

Claims priority, application Great Britain, Oct. 23, 1970, 50,498/70

Int. Cl. H02p *5/16*

U.S. Cl. 318—313 6 Claims

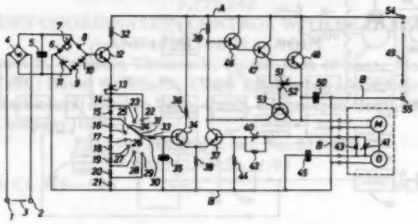


A method and apparatus for controlling the rotational speed of a roller. The actual speed of the roller which is compared with a set speed in order to determine the deviation or error, is derived by means of a pulse disc which bears a plurality of pulse producing fields. The time interval which is required for each pulse flank to pass successively beyond two detectors is measured, and the inverse value of said interval instantly indicates the actual roller speed so that at each angular position of the roller, the roller speed may be exactly controlled.

3,777,234
CIRCUIT ARRANGEMENT FOR REGULATING THE SPEED OF A DC MOTOR

August Luger, Munich, Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 889,632, Dec. 31, 1969, abandoned. This application Sept. 13, 1971, Ser. No. 180,008
Int. Cl. H02p 5/16
U.S. Cl. 318—326 11 Claims

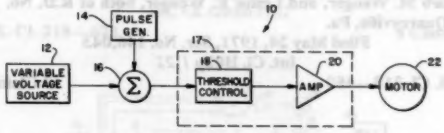


A circuit arrangement for controlling the speed of a DC motor by comparing a first voltage, which varies with the speed of the motor, with a second, control voltage, and varying the current fed to the motor in accordance with the resultant of the two voltages. A bridge circuit including a first current amplifier supplies a constant control voltage (the second voltage); the control voltage is compared with the first voltage by a differential amplifier. The resultant voltage is fed to a second current amplifier the output of which controls current input to the motor. The first voltage is preferably supplied by a generator driven in synchronism with the motor, and the second voltage is preferably supplied by a bridge having a semi-conductor in one branch thereof. The circuit includes temperature-dependent resistances which compensate for temperature variations in the generator, as well as in the circuit arrangement generally.

3,777,235
VARIABLE DC MOTOR POWER SOURCE

Abbott W. Lahti, Cambridge, Mass., assignor to Power Systems, Inc., Cambridge, Mass.

Filed July 19, 1971, Ser. No. 163,613
Int. Cl. H02p 5/34
U.S. Cl. 318—341 13 Claims

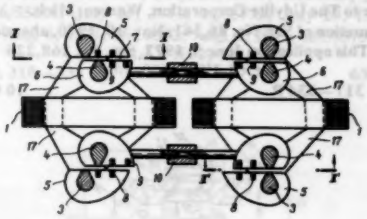


Precise control of fractional horse power DC motors is provided by a DC power source having a negative feedback amplifier, the signal at the output of the amplifier being controlled by a voltage derived from a potentiometer. A pulsed voltage having a peak amplitude somewhat less than the dead band voltage threshold of the amplifier is applied to an input terminal of the amplifier for low speed control of the motor. Peak current limiting with a load compensator operates to reduce the output voltage of the power source after a short circuit is removed.

3,777,236
RECIPROCATING MOTOR

Jan Hrubes, and Alois Dubansky, both of Prague, Czechoslovakia, assignors to Ceskoslovenska Akademie ved, Prague, Czechoslovakia

Filed Oct. 25, 1972, Ser. No. 300,743
Claims priority, application Czechoslovakia, Oct. 26, 1971, 7542/71
Int. Cl. H02k 33/18
U.S. Cl. 318—122 5 Claims

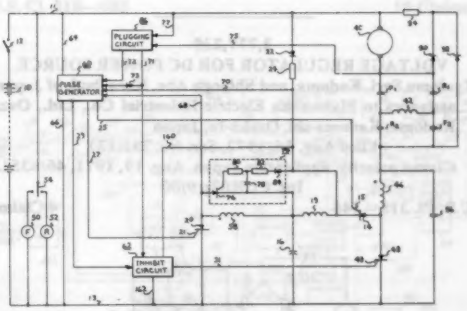


A motion electromagnet is provided having a main magnetic circuit with an exciting coil. An auxiliary magnetic circuit under the influence of the magnetic flux of the main magnetic circuit has a movable and a stationary part with movable and stationary windings respectively therein which are off-set with a constant air gap maintained between the stationary and movable parts. Energizing the exciting coil of the main magnetic circuit moves the movable parts of the auxiliary magnetic circuit into alignment with the stationary part. By symmetrically duplicating the main and auxiliary magnetic circuits, and alternately activating the main magnetic circuits via their respective exciting coils by a switching device, an oscillating movement in the electromagnet is produced.

3,777,237
DIRECT CURRENT POWER CONTROL CIRCUIT

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 3, 1972, Ser. No. 231,487
Int. Cl. H02p 5/12
U.S. Cl. 318—345 15 Claims



A control circuit for controlling the effective power to a load from a power source of substantially constant direct current voltage in which the amount of effective power delivered to the load is controlled by controlling the percentage of time that the load and the power source are interconnected. Included within the system is a switching device preferably of the solid-state type which is alternately placed in the conductive and nonconductive state to vary the percentage of time. Two forms are included, the first being essentially a low power

form and the second a dual level type of control system in which it is possible to alternate selectively between two modes of operation to operate the control circuit in a high and low power mode. Also provided is the application of the dual mode system to a direct current motor control system for providing what in the art is known as plugging.

3,777,238

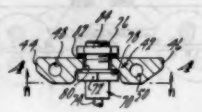
ARRANGEMENT FOR MOUNTING SEMI-CONDUCTIVE DEVICES TO HEAT SINKS

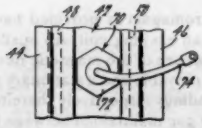
Eugene W. Rabut, Shelby Twp., Macomb County, Mich., assignor to The Udylite Corporation, Warren, Mich.

Continuation of Ser. No. 88,341, Nov. 10, 1970, abandoned. This application June 5, 1972, Ser. No. 268,223

Int. Cl. H01l 3/00, 5/00

U.S. Cl. 317—234 R **10 Claims**





This disclosure pertains to a rectifier system which includes a plurality of diodes in the secondary circuit of a main transformer to provide rectification for the energy flowing therefrom, and a plurality of semi-conductive rectifier devices for controlling current to the primary windings thereto. The diodes are stud mounted and adapted to be self locked between a pair of channel portions of an electrically conductive heat sink, whereas the semi-conductive rectifier devices are stud mounted to extending flange portions of a novel heat sink bracket. The bracket is comprised of a base portion wherefrom is extended from one surface an extending flange. A bore is disposed in the flange portion, a preselected distance from the base, for self lockingly receiving the semi-conductive rectifier device. The bracket itself is fastened to a main heat sink by means of an epoxy which is heat conductive and electrically insulated.

3,777,239

VOLTAGE REGULATOR FOR DC POWER SOURCE

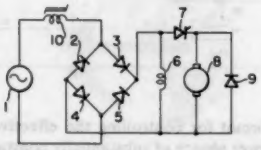
Tsutomu Seri, Kadoma, and Shinogu Abe, Nara, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Oaza Kadoma, Kadoma-shi, Osaka-fu, Japan

Filed Aug. 16, 1972, Ser. No. 281,121

Claims priority, application Japan, Aug. 19, 1971, 46/63512

Int. Cl. H02p 9/00

U.S. Cl. 318—345 **4 Claims**



In a DC power source in which a silicon controlled rectifier is connected in series with a DC circuit of a single phase AC bridge rectifier so that the phase of the firing angle may be controlled to control the load voltage upon the armature of a D.C. motor, a saturable reactor is inserted in series with the AC power source of said bridge rectifier.

3,777,240

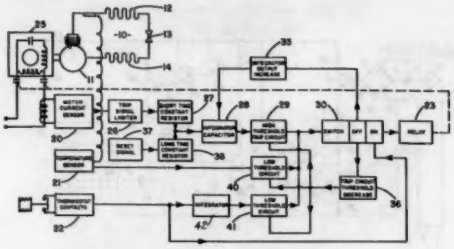
THERMOSTAT CHATTER PROTECTION FOR REFRIGERATION COMPRESSOR MOTORS

Donald E. Neill, Liverpool, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 188,275, Oct. 12, 1971; abandoned. This application Sept. 21, 1972, Ser. No. 290,925

Int. Cl. H02h 7/08

U.S. Cl. 318—471 **5 Claims**



The motor of a reciprocating refrigeration compressor is provided with a motor control and protection system, which includes means for preventing the contacts of the motor relay from welding or otherwise being damaged by vibration of the system thermostat. The motor relay is energized or de-energized by a solid state switch, which is controled by two or more trip circuits in response to a condition of operation of the system. A current sensor provides a signal proportional to motor current which is summed with an opposite polarity reset signal and integrated to provide a signal to a first trip circuit. The room thermostat contacts close in response to a demand for refrigeration and provide a current through the switch means to energize the relay. When the thermostat contacts stay open for a short period of time, the open circuit voltage across them is integrated and eventually trips a second trip circuit which actuates the switch means to a nonconducting condition, thereby de-energizing the relay and preventing damage to the relay contacts. A feedback circuit raises the output of the integration circuit and decreases the trip threshold of the first trip circuit to trip the first trip circuit, whereby a period of time must elapse while the reset signal is integrated to the reset level before the relay contacts can be closed again. If the contact chatter lasts only a very short time, the signal due to integrating the voltage across them will not be sufficient to cause an unnecessary trip.

3,777,241

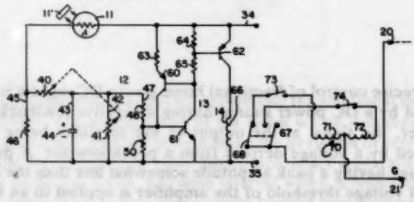
CONTROL SPECIFICALLY FOR ANIMAL BUILDINGS

Caleb M. Wenger, and Lester E. Wenger, both of R.D. No. 1, Quarryville, Pa.

Filed May 24, 1971, Ser. No. 146,043

Int. Cl. H02p 1/22

U.S. Cl. 318—480 **12 Claims**



A control for animal buildings which includes a sensing variable resistor, which may for example change its resistance

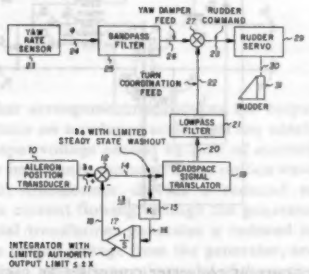
with change of sunlight, temperature, wind velocity, wind direction, or evaporation. It operates louver covers to admit or exclude sunlight, air, wind etc. to an animal building, preferably of the type which has louvers in a sloping roof directed toward the south. A circuit is included which has a sensing resistor, transistor switch operated by the sensing resistor, a relay operated by the switching transistors and in the preferred embodiment a reversible motor drum and cables operated by the relay. There are electronic time delay means between the sensing resistors, and the transistor switching unit.

3,777,242

TURN COORDINATION CONTROL WITH DEAD SPACE AND LIMITED WASHOUT

Robert F. Tribuno; Thomas E. Foster, both of Santa Monica, Calif.; David W. Mineck, Cedar Rapids, Iowa, and Edwin R. Hattendorf, Mission Viejo, Calif., assignors to Collins Radio Company, Dallas, Tex.

Filed Dec. 21, 1972, Ser. No. 317,472
Int. Cl. G05b *11/01*
U.S. Cl. 318—586 **5 Claims**



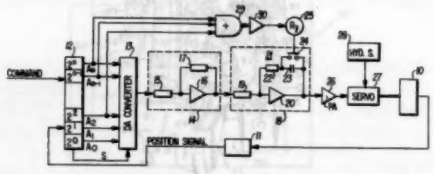
A turn coordination feed which, unlike conventional linear control operates on a combined zero-linear coordination basis. Small aileron position input signals are precluded from the coordination function and those exceeding a predetermined threshold are utilized in normal linear coordination control. An amplitude related limited washout and dead space translator coact to permit desired low threshold uncoordinated maneuver while maintaining steady state washout of airleron position signals.

3,777,243

POSITIONING CONTROL APPARATUS

Nobuo Taguchi, and Takehiko Ono, both of Tokyo, Japan, assignors to Tokyo Shibaura Electric Company, Ltd., Kanagawa-ken, Japan

Filed Feb. 14, 1972, Ser. No. 225,888
Claims priority, application Japan, Feb. 18, 1971, 46/7172
Int. Cl. G05b *6/02*
U.S. Cl. 318—621 **5 Claims**



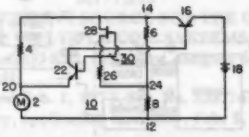
A positioning control system for positioning a movable member includes a comparator for comparing a controlled variable with a command variable to provide an actuating or error signal. An electric controller provides an electrical manipulated variable signal from the actuating or error signal. A detector will detect when the actuating signal is smaller than a predetermined value to thereby cause the electric controller to change and thereby increase the lag characteristic thereof such that the movable member is quickly and accurately positioned.

3,777,244

SPEED CONTROL DEVICE FOR A D.C. MOTOR

Shinya Kosaka, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed July 12, 1972, Ser. No. 271,196
Claims priority, application Japan, July 12, 1971, 46/51578; July 16, 1971, 46/53385; July 20, 1971, 46/54010; July 23, 1971, 46/55011; July 26, 1971, 46/55773; July 29, 1971, 46/56989; Aug. 6, 1971, 46/59372; Aug. 6, 1971, 46/59373
Int. Cl. H02p *5/16*
U.S. Cl. 318—331 **63 Claims**



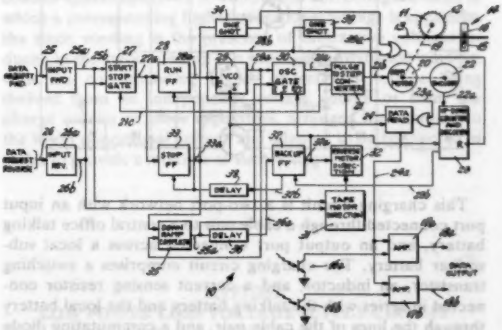
A speed control device of a D.C. motor including a comparator for detecting voltage corresponding to the rotation speed of the D.C. motor from the detection terminal of a bridge circuit having one of its arms connected to the D.C. motor and comparing the voltage thus detected with the reference voltage so as to control the amount of current running through a power supply control transistor disposed between the power supply terminal of the bridge circuit and the D.C. power source and maintain the rotation speed of the D.C. motor, characterized in that said speed control device comprises a reference voltage generating circuit consisting of a field effect transistor and a reference voltage across the reference resistor.

3,777,245

CLOSED LOOP STEPPING MOTOR CONTROL FOR A TAPE READER

Joe C. May, Cheshire, Conn., assignor to The Superior Electric Company, Bristol, Conn.

Filed June 23, 1972, Ser. No. 265,658
Int. Cl. G05b *19/40*
U.S. Cl. 318—685 **10 Claims**



A tape reader having a reading station past which tape having transverse rows of holes is moved by a drive system that includes a stepping motor with the system, after a stop command, inhibiting further reading while continuing to move the tape a plurality of rows and then reversing the tape movement

for only the extent that it continued moving after the stop command thereby enabling the system to move the tape at a faster rate than if the system was required to have the ability to stop immediately at any one of the rows.

3,777,246

ROTARY DRIVE SYSTEMS

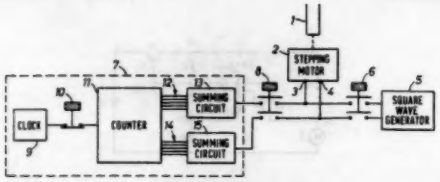
Anthony Michael Preston Barnes, Camberley, England, assignor to Recording Designs Limited, Camberley, England

Filed Sept. 17, 1970, Ser. No. 73,077

Claims priority, application Great Britain, Sept. 25, 1969, 47,157/69

Int. Cl. H02k 37/00

U.S. Cl. 318—696 2 Claims



A rotary drive system for use for example, in a transport system for a magnetic tape recorder, comprises a stepping motor adapted to be driven by the output of a function generator. The generator is arranged to generate a waveform, for example a sinusoidal waveform, composed of a plurality of contiguous voltage steps. The generator is such that, when a control means is operated to stop said motor, the generated waveform is frozen in the state obtaining at the time of said operation of the control means, so that the motor does not receive a further voltage step and stops substantially instantaneously.

3,777,247

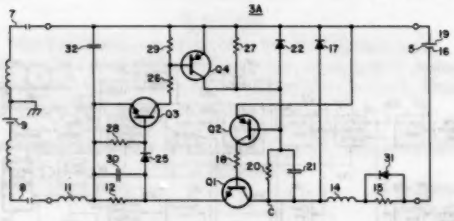
BATTERY CHARGING CIRCUIT FOR SUBSCRIBER CARRIER EQUIPMENT

Neale A. Zellmer, Belmont, Calif., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Mar. 1, 1972, Ser. No. 230,619

Int. Cl. G05f 1/56; H02j 7/06

U.S. Cl. 320—2 13 Claims



This charging circuit is a two-port network with an input port connected through a cable pair to a central office talking battery, and an output port connected across a local subscriber battery. The charging circuit comprises a switching transistor, an inductor, and a current sensing resistor connected in series with the talking battery and the local battery through the lines of the cable pair; and a commutating diode connected across the series combination of the inductor and the local battery. The transistor switch connects the inductor and local battery to and disconnects them from the talking battery during charging of the local battery. When the switch is closed, the inductor stores energy while the local battery receives a charging current from the talking battery. When the switch is open, the magnetic field on the inductor collapses to provide a current through the commutating diode for charging the local battery. The magnitude of the charging current that is drawn from the office battery and is sensed by the resistor is compared with a reference voltage on a reference diode in a second transistor which controls the operation of the transistor switch in order to draw a relatively constant current from the talking battery.

3,777,248

DIRECT-CURRENT CONVERTER

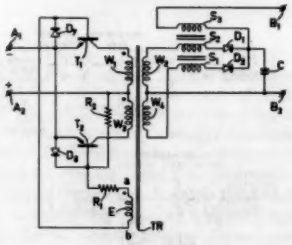
Johannes Volkert Vermolen, Beekbergen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 26, 1972, Ser. No. 220,929

Claims priority, application Netherlands, Feb. 9, 1971, 7101662

Int. Cl. H02m 3/32

U.S. Cl. 321—2 9 Claims



A direct-current converter comprises an oscillator circuit and a smoothing capacitor. The oscillator circuit and the smoothing capacitor are isolated from each other by one or more windings of a saturable choke. The wattless loss which would occur in each half period is eliminated in that an additional winding on the choke core saturates the choke after disappearance of the switch-on phenomenon. The additional winding carries the output current.

3,777,249

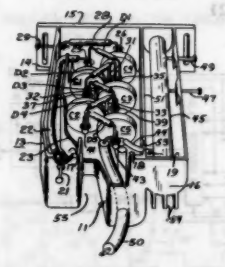
MULTIPLIER ASSEMBLY

Christ J. Dumas, 4600 S. Wisconsin Ave., Forest View, Ill.

Continuation of Ser. No. 229,905, Feb. 28, 1972, abandoned. This application Mar. 14, 1973, Ser. No. 340,968

Int. Cl. H02m 7/00

U.S. Cl. 321—8 3 Claims



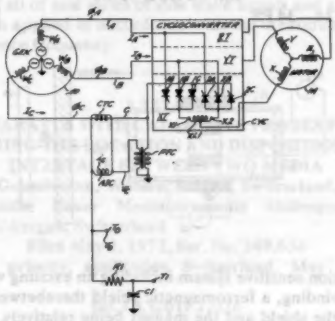
A voltage multiplier assembly for high voltage application which provides a unique mechanical and dielectric construction to improve the dielectric breakdown characteristics and inhibit corona discharge in the components of the assembly.

3,777,250

FILTER FOR REPLACING NOTCHES IN ELECTRIC WAVES

Ernst K. Kaeser; Alois F. Geiersbach, both of Milwaukee, and Manfred E. Neumann, New Berlin, all of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed May 7, 1973, Ser. No. 358,135
Int. Cl. H02m 1/12
U.S. Cl. 321—9 R 19 Claims



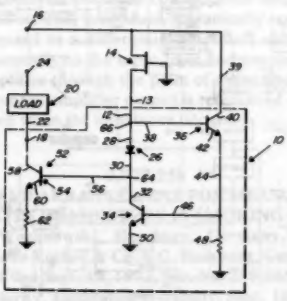
A wave filter arrangement reproduces the output voltage from a generator on a reduced scale with any notches in the generator output voltage caused by flow of current through the generator impedance replaced in the replica wave. A step-down current transformer derives a reduced magnitude replica of the current flowing through the generator, a step-down potential transformer generates a reduced magnitude replica of the output voltage from the generator, and an auxiliary inductance, which is a scale model of the generator sub-transient reactance, is connected across the current transformer secondary winding so that the replica of the generator voltage and the voltage drop across the auxiliary inductance are additive and remove notches and other distortions from the reduced scale reproduction of the generator voltage.

3,777,251

CONSTANT CURRENT REGULATING CIRCUIT

James B. Cecil, Mesa, and Walter R. Davis, Tempe, both of Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Oct. 3, 1972, Ser. No. 294,723
Int. Cl. G05f 3/08
U.S. Cl. 323—4 9 Claims



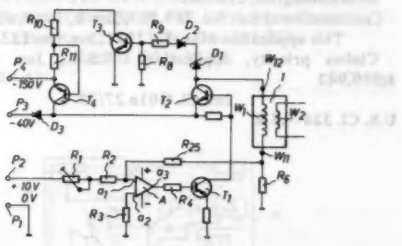
Circuitry for providing a constant current to a load includes a source of current and a regulating circuit interposed between the current source and the load. The regulating circuit includes a current shunting transistor coupled to the output of the current source and a feedback transistor also coupled to the output of the current source and to the base of the current shunting transistor. A diode connected between the current shunting transistor and the current source is chosen to have a dynamic admittance substantially equal to the transconductance of the current shunting transistor to provide the latter with unity voltage gain. A variation in current output of the source is accommodated by the current shunting transistor so that a substantially constant voltage at the output thereof is maintained. An output circuit including a transistor, coupled to the output of the current shunting transistor and to the load, and controlled by the output voltage, provides a substantially constant current to the load despite current variations from the current source.

3,777,252

CONSTANT CURRENT SOURCE FOR THE OPERATION OF MULTIPLE COIL SYSTEMS

Hans-Hinrich Leszke, Kiel, Germany, assignor to Dr.-Ing. Rudolf Hell GmbH

Filed Feb. 1, 1973, Ser. No. 328,741
Claims priority, application Germany, Feb. 5, 1972, P 22 05 468.8
Int. Cl. G05f 1/56, 1/62
U.S. Cl. 323—4 11 Claims



A constant current source for the operation of multiple coil systems, utilizing a static winding and one or more dynamic windings effective at a common air gap, including a constant operational voltage source, a corrective element between the operation voltage source and static winding, and a current control system operative to control the correcting element, in which a corresponding higher operational voltage is applied to the static winding in the presence of subtractive voltages induced in the static winding as a result of the dynamic winding, with the corresponding higher operational voltage being derived from an independent voltage source or from the charge on one or more capacitors, arranged for charging to the lower operational voltage and adapted to be connected in series to provide a multiple of such voltage.

3,777,253

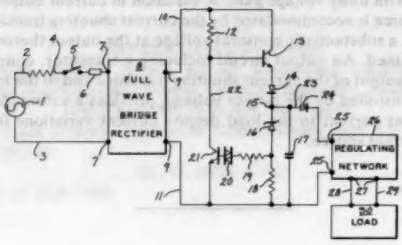
LOW POWER LOSS VOLTAGE SUPPLY CIRCUIT

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Oct. 24, 1972, Ser. No. 299,999
Int. Cl. G05f 1/40
U.S. Cl. 323—22 T 3 Claims

A low power loss, direct current power supply has a pair of D.C. feed lines and a first electrical switch that transmits

direct current from the feed lines to an energy storage element feeding the output of the power supply. A first voltage responsive current gate is across the energy storage element, and a



second voltage responsive current gate is joined to the circuit of the first gate to control a second electrical switch for shunting of the first switch.

3,777,254

NUCLEAR MAGNETIC RESONANCE SPECTROMETER WITH JOINTLY FUNCTIONING EXTERNAL AND INTERNAL RESONANCE STABILIZATION SYSTEMS

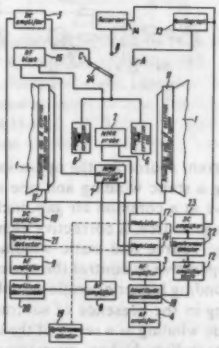
Jury Lvovich Kleiman, Fontanka, 126, kv. 25; Nikolai Viktorovich Morkovin, Krasnoputilovskaya, 53, kv. 43, and Vladimir Antonovich Pavlenko, ulitsa Tipanova, 5, kv. 77, all of Leningrad, U.S.S.R.

Continuation of Ser. No. 789,887, Jan. 8, 1969, abandoned. This application Mar. 12, 1971, Ser. No. 123,915

Claims priority, application U.S.S.R., Jan. 15, 1968, 1,210,942

Int. Cl. G01n *27/78*

U.S. Cl. 324—.5 R **3 Claims**



A nuclear magnetic resonance spectrometer comprising an electromagnet accommodated in a housing with coils disposed within the magnetic field between the poles of the electromagnet. The electrical axes of the coils are oriented perpendicularly to the pole faces of the electromagnet. The coils are connected to the output of an internal nuclear magnetic resonance stabilization system. An analytical nuclear magnetic resonance probe is disposed in the zone defined by the coils and connected to the input of the internal nuclear magnetic resonance stabilization system. A reference nuclear magnetic resonance probe is disposed within the magnetic field of the electromagnet and is located so as to be outside the zone defined by the coils. An external nuclear magnetic resonance stabilization system is connected to the reference nuclear magnetic resonance probe and nuclear magnetic resonance signals derived from the analytical nuclear magnetic resonance probe are recorded. The external and internal stabilization systems operate simultaneously.

3,777,255

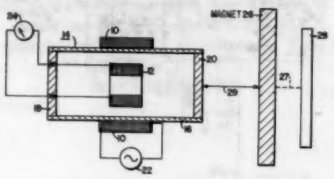
POSITION SENSOR UTILIZING A PRIMARY AND SECONDARY SHIELDED FROM ONE ANOTHER BY A FERROMAGNETIC SHIELD AND A MAGNET WHOSE POSITION RELATIVE TO THE SHIELD CHANGES THE SHIELDING

Frederick J. Young, Swissvale, and Richard A. Elco, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 26, 1972, Ser. No. 301,019

Int. Cl. G01r *33/00*

U.S. Cl. 324—34 PS **11 Claims**



A position sensitive system including an exciting winding, a sensing winding, a ferromagnetic shield therebetween, and a magnet, the shield and the magnet being relatively movable. The magnetic skin depth is a function of the distance between the shield and the magnet, whereby voltage induced in the sensing coil by the exciting coil is a function of that distance. For any given set of parameters there will be a range wherein the depth of the magnetic skin of the shield is increased as the distance between the shield and the magnet is reduced, whereby voltage induced in the sensing coil increases as said distance decreases, and vice versa. This provides transducer capability which may be applied to proximity detection, mechanical excursion detection, and other uses. Examples of specific adaptations are as a position detector and, when coupled to either an elastic diaphragm or piston, as a pressure transducer.

3,777,256

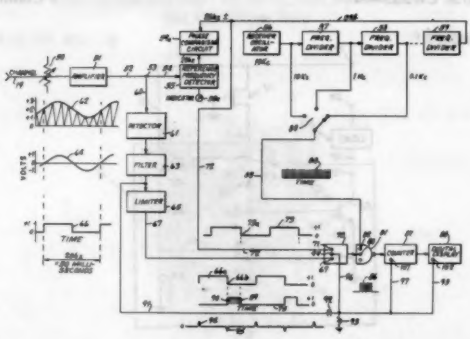
DELAY DISTORTION MEASUREMENT SYSTEM

John M. Harrison, Gossville, N.H., assignor to North Electronics Corporation, Concord, N.H.

Filed Feb. 14, 1972, Ser. No. 225,855

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **7 Claims**



A method of measuring frequency delay distortion of a communication channel comprising, generating at a sending end of said channel a plurality of sustained sine wave signals distributed throughout a frequency spectrum of said channel, modulating at a lower frequency each of said sine wave signals in repetitive progression for a preselected period of each,

transmitting the modulated signals over said channel to its distant end, and at said distant end, locally generating a signal of frequency substantially that of said modulating frequency, detecting and filtering said modulated incoming signals, and measuring the difference in time between that at which each said detected and filtered signal goes to zero and that at which said locally generated signal goes to zero, for adjacent cycles timewise thereof respectively, the frequency of the locally generated signal being synchronized with the incoming modulating frequency upon receipt of one of said sine wave signals employed as a reference frequency, or alternatively, following receipt of all of said series of sine wave signals and a constant correction applied in accordance with the measured delay of the reference frequency.

3,777,257

APPARATUS WITH CAPACITIVE PROBES FOR MEASURING THE LOCATION AND DISPOSITION OF AN INTERFACE BETWEEN TWO MEDIA

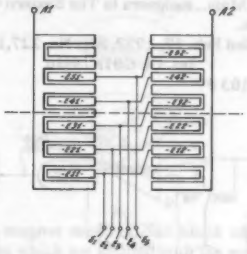
Heribert Geisselmann, Wohlen/Aargau, Switzerland, assignor to Camille Bauer Messinstruments Aktiengesellschaft, Wohlen/Aargau, Switzerland

Filed May 2, 1972, Ser. No. 249,634

Claims priority, application Switzerland, May 6, 1971, 6742/71

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **10 Claims**



Apparatus for measuring location and disposition of an interface between two media exhibiting a difference in dielectric constants or electric conductivity and including a column of pairs of capacitors arranged in a direction along which the location and disposition of the interface may vary, the media influencing the value of the capacitors. The capacitors of a pair having first common electrode configuration connected to an input line and second, individual, galvanically separated electrodes connected to a differential amplifier; electrical pulses are fed sequentially to the input lines and coupled to the differential amplifier through the pairs of capacitors. Imbalance on the differential amplifier output is referenced against pulse count reached when the imbalance occurs.

3,777,258

METHOD AND ARRANGEMENT FOR MEASURING THE QUANTITY OF MOISTURE IN SMOKING GOODS

Waldemar Wochnowski, Hamburg, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

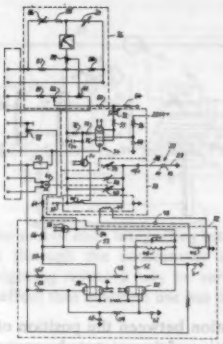
Filed Sept. 13, 1972, Ser. No. 288,665

Claims priority, application Germany, Sept. 16, 1971, P 21 46 386.5

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 QS **16 Claims**

Tobacco moving along a conveyor belt is compressed with a force several times the force of the dead weight of the tobacco. The compressed tobacco has an electric field applied through a first and second electrode positioned on the same side thereof. The electrodes constitute a capacitor which is part of a tuned circuit and under resonance conditions the signal derived from the tuned circuit has a magnitude corresponding to the percentage of moisture in the tobacco.



3,777,259

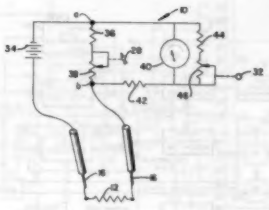
APPARATUS FOR DETERMINING THE RESISTANCE PER UNIT LENGTH OF A RESISTIVE CONDUCTOR

Henry H. Clinton, Walnut St., R.F.D. 1, Ivoryton, Conn.

Filed Apr. 2, 1973, Ser. No. 347,357

Int. Cl. G01r *27/02*

U.S. Cl. 324—62 **7 Claims**



A device is provided for testing resistive ignition wire to provide an indication of the resistance of such wire in terms of resistance units per unit length of wire under test. A manually operable adjustment knob has an associated dial calibrated in length units. When a wire of given length is to be tested, the adjustment knob is set to such length and an associated meter is thereby conditioned to provide a scale reading related directly to the resistance of the test wire per unit length thereof.

3,777,260

GRID FOR MAKING ELECTRICAL CONTACT

Phillip J. Davies, La Grangeville; Angelo S. Gasparri, Poughkeepsie, and Daniel J. McAtee, Rhinebeck, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

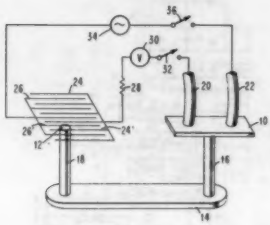
Filed Dec. 14, 1972, Ser. No. 315,264

Int. Cl. G01r *27/14*

U.S. Cl. 324—64 **6 Claims**

This specification discloses a checker for checking electrical continuity. The checker uses a grid of lines as a probe to make electrical contact to points on the circuit being checked.

This probe relies on the close spacing between the lines of the grid to make the connection to the points as opposed to the



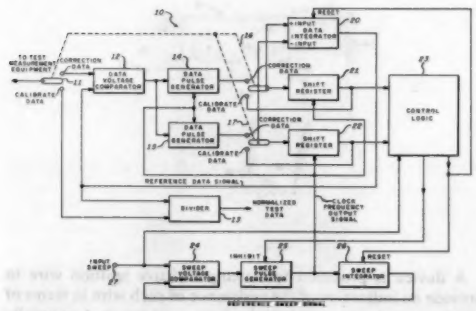
accurate registration between the position of the lines of the grid with the position of the points to be contacted.

3,777,261

CALIBRATION APPARATUS AND METHOD FOR USE WITH SWEEP RATE TEST MEASUREMENT EQUIPMENT

Harry F. Strenglein, Clearwater, and David E. Kent, Palm Harbor, both of Fla., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Aug. 27, 1971, Ser. No. 173,512
Int. Cl. G01r *15/12, 1/02*
U.S. Cl. 324—73 R **16 Claims**



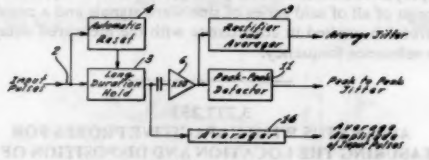
An apparatus used in conjunction with sweep rate test measurement equipment to normalize output data produced by the test equipment which includes a comparator that is responsive to correction data produced by the test equipment while the test equipment is coupled to a standard device having known parameters. A reference data signal is also applied to the comparator simultaneously with the correction data and the comparator produces difference signals representative of deviations in magnitude between the correction data and the reference data signals which are stored in shift registers at the sweep rate of the test equipment. The test equipment is subsequently coupled to prime equipment having unknown parameters for test measurement and the stored difference signals are combined with the test data from the prime equipment in a divider circuit which produces output test data that is normalized to the known parameters of the standard equipment.

3,777,262

PULSE AMPLITUDE VARIATION DETECTOR

Richard E. Vahlstrom, Villa Park; Donald C. Nutten, Newport Beach; Dennis R. Bayne, Placentia, and Stanley Oster, Anaheim, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed June 7, 1971, Ser. No. 150,273
Int. Cl. G01r *19/16*
U.S. Cl. 324—103 P **4 Claims**



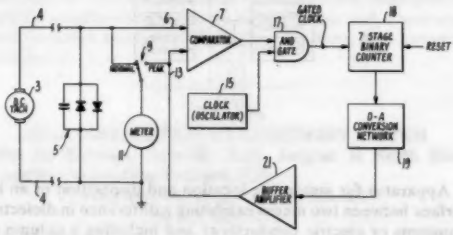
A long term hold circuit accepts a train of input pulses having amplitude variation "jitter" thereon, and feeds simultaneously into an averager and an AC amplifier, the AC amplifier feeding simultaneously into another averager and a peak-to-peak detector.

3,777,263

PEAK HOLDING CIRCUIT

Robert R. Perron, Beverly, and Harvey L. Pastan, Chestnut Hill, both of Mass., assignors to The Eastern Company, Naugatuck, Conn.

Filed Feb. 17, 1972, Ser. No. 227,174
Int. Cl. G01r *19/16*
U.S. Cl. 324—103 P **1 Claim**



A peak holding circuit is provided wherein an analog voltage from a tachometer is converted to and stored as a digital value and the digital value is converted back to an analog voltage and compared continuously with the tachometer output and corrected when the digital value falls below that of said output. A practical application of the circuit is described wherein the peak value of an anemometer is stored for indefinite lengths of time.

3,777,264

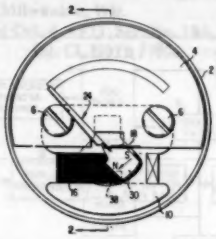
METER MOVEMENTS

Virgil Erbert, Albuquerque, N. Mex., assignor to Rolamite Incorporated, San Francisco, Calif.

Continuation-in-part of Ser. No. 114,312, Feb. 10, 1971, abandoned. This application Jan. 17, 1972, Ser. No. 218,388
Int. Cl. G01r *1/00, 11/02*
U.S. Cl. 324—146 **17 Claims**

A moving magnet meter movement in which a pointer is mounted on a support member for pivoting about an axis. The pointer and the support member are formed of substantially flat sheet material interconnected by opposing surfaces adjacent the pivot axis for confining the pointer to swinging about said pivot axis with a minimum of frictional drag. A

vane on the pointer is magnetized and an electromagnetic coil is positioned adjacent the vane to cause the pointer to swing



about the pivot axis in response to the magnetic field associated with the coil.

3,777,265

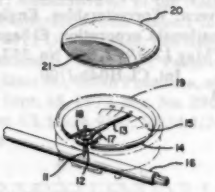
INDUCTION AMMETER WITH SELF INDUCED RESTORING TORQUE

Lester R. Void, Perkasie, Pa., assignor to Electro-Mechanical Instrument Div., VLN Corp., Perkasie, Pa.

Filed Jan. 19, 1973, Ser. No. 325,069

Int. Cl. G01r *1/20, 1/16*

U.S. Cl. 324—146 **8 Claims**



In a moving magnet meter a dial blank of soft magnetic material has tabs which are aligned with the poles of the moving magnet to establish the zero setting of the pointer. The pointer is rotationally deflected over the dial by the magnetic field which is established transverse to the line of the tabs by current flowing through a conductor carrying current to be measured. With no current in the conductor the magnetic axis of the magnet aligns itself with the induced pole arms in the tabs as a path of minimum reluctance. The tabs can be easily adjusted to control the sensitivity of the meter and the magnitude of the restoring torque.

3,777,266

PROGRAMMABLE INTEGRATOR

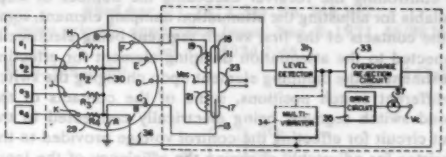
Edward M. Marwell, Mount Kisco, and Eugene P. Finger, Brewster, both of N.Y., assignors to Curtis Instruments, Inc., Mount Kisco, N.Y.

Filed July 26, 1972, Ser. No. 275,329

Int. Cl. G09f *9/00*; G01r *11/44*

U.S. Cl. 324—182 **14 Claims**

A method and apparatus is disclosed for measuring the operational use of a physical system. The apparatus includes an integrator having a reversible coulometer including a bored tube made of a transparent or translucent material with a pair of electrodes connected to each end thereof. A transparent electrolyte is positioned in the bore between two columns of an opaque electrolytically platable metal. A pair of light sensitive elements, spaced from one another, are positioned on one side of the tube, and a source of light is positioned on the opposite side of the tube. At least one source of current having an amplitude which is a function of the use of the system being measured is connected to the electrodes of the coulometer through an interconnector plug. The plug includes a plurality of weighting resistors, one for each source of current, which appropriately adjust the relative contribution of each current source to the total current conducted through the coulometer. A new plug is connected between the coulometer and the current sources at the end of each integrating interval so that current conduction through the coulometer is reversed. The values of the weighting resistors may be varied from plug to plug to vary the effect that machine use has on the integrating interval.



3,777,267

APPARATUS FOR SEARCHING FOR PEOPLE WHO ARE BURIED OR TRAPPED AND EQUIPPED WITH THE SAME TYPE OF APPARATUS

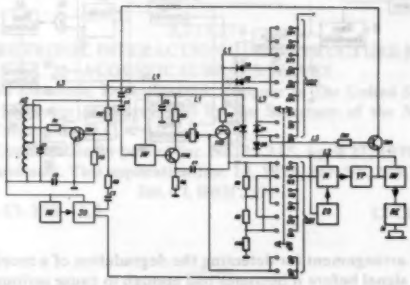
Hans Van der Floe, Selzach; Herbert Kully, Solothurn; Vacalv Stverak, Solothurn, and Stephan Affolter, Solothurn, all of Switzerland, assignors to Autophan Aktiengesellschaft, Solothurn, Switzerland

Filed Dec. 18, 1972, Ser. No. 315,863

Claims priority, application Switzerland, Dec. 24, 1971, 18895/71

Int. Cl. H04b *1/40*

U.S. Cl. 325—18 **9 Claims**



Apparatus for searching and determining the location of a transmitter carried on a person buried or trapped by a landslide, cave-in, and the like wherein the apparatus consists of a single unit having a selectively operative transmitter stage portion and a selectively operable receiver stage portion, a portable power supply, the receiver having an antenna and an input circuit wherein the efficiency of the input circuit is selectively adjustable in step-like manner to at least two different values by utilization of a transistor along with an optional resistor interposed between the transistor and the antenna, an input amplifier for receiving and amplifying the input signal, a manually operative progressively adjustable attenuation damping element electrically connected to the input amplifier and the input circuit, a receiver oscillator having an output frequency different from the normal frequency of the receiver, the output signal from the receiver oscillator being fed into a mixing stage along with the signal from the attenuation damping amplifier being fed into the mixing stage for comparison and mixing of the two signals, the mixing stage output signal being fed to a filter stage for initial filtering, the output signal from the filter stage being fed to an amplifier stage for amplification and feeding through a control element

to an earphone-type device for converting the electrical signal into an audio detectable signal, the attenuation damping element comprising a manually operable switch including at least two switch segments each having a plurality of corresponding contacts and switch positions, the number of switch positions for controlling the receiver exceeding the number of steps available for adjusting the attenuation damping element, some of the contacts of the first switch segment being electrically connected to the attenuation damping element for effecting adjustment of the damping element upon changing the switch to different switch positions, some of the contacts of the second switch segment being electrically connected to the input circuit for effecting the control voltage provided to the transistor for adjustably changing the efficiency of the input circuit, the two switch segments being manually interconnected and operative such that a different total damping effect is obtained for each different switch receiving position with the total damping effect being a function of the selected efficiency of the input circuit in combination with the selected adjustments of the damping element.

3,777,268

DEGRADATION DETECTION IN A PCM SYSTEM

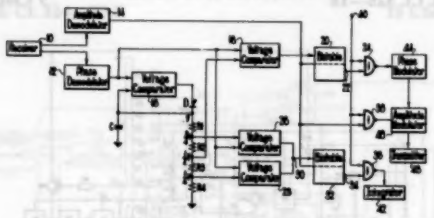
Donald Jack Cleobury, Hinckley, England, and Bernard Wilson, deceased, late of Conventry, England, assignors to The General Electric Company Limited, London, England

Filed Sept. 27, 1971, Ser. No. 183,770

Claims priority, application Great Britain, Sept. 28, 1970, 46,059/70

Int. Cl. H03k 9/10, 13/32

U.S. Cl. 325—38 R **10 Claims**



An arrangement for detecting the degradation of a received PCM signal before it becomes bad enough to cause serious errors. Ancillary threshold detectors operate at levels on either side of the basic threshold. A falling signal level or rising noise level causes a received pulse to fall in the range between the ancillary levels, producing a warning signal to indicate a degraded signal. As described, the warning signals are integrated over a period of time to produce a time average. The arrangement is useful in repeaters of a radio relay system.

3,777,269

BINARY MODULATOR FOR COHERENT PHASE-SHIFT KEYED SIGNAL GENERATION

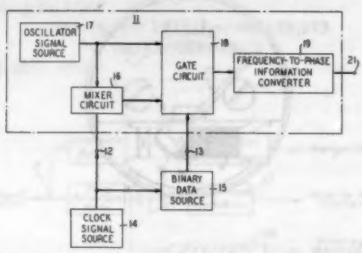
Douglas MacPherson Brady, Middletown, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 12, 1972, Ser. No. 243,254

Int. Cl. H04l 27/20

U.S. Cl. 325—163 **10 Claims**

A binary modulator for encoding the two states of an input binary signal which is synchronized to a clock signal into two phase deviations of a frequency modulated coherent phase-shift keyed signal. The modulator first encodes the binary signal into a frequency modulated coherent frequency-shift keyed signal having first and second frequencies which differ by a multiple of the clock frequency. Phase-to-frequency conversion apparatus is then provided for translating the information contained in the frequencies of the frequency-shift keyed



signal into phase shifts of a second signal which is the desired frequency modulated coherent phase-shift keyed signal.

3,777,270

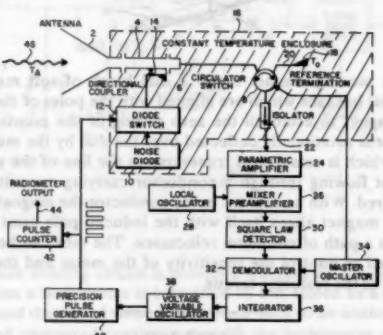
PRECISION VARIABLE PULSE RATE NULLING RADIOMETER

Walter H. Hardy, Vancouver, Canada, and Kenneth W. Gray, Poolbrook Malvern, Worcestershire, England, assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 12, 1972, Ser. No. 252,799

Int. Cl. H04b 1/00

U.S. Cl. 325—363 **2 Claims**

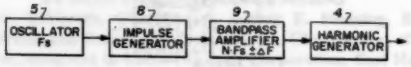


A radiometer system comprising an antenna; a reference signal source; sampling means connected to receive and alternately pass signals from said antenna and from said reference source; a constant amplitude noise source; switch means connected to add the output of said noise source to the signals from said antenna before said signals from said antenna are applied to said sampling means; a constant temperature enclosure enclosing said reference source, said sampling means, said noise source, and said switch means, and maintaining the enclosed components at a known temperature; comparison means connected to receive and compare the signals passed by said sampling means and to emit an error signal indicative of any difference between the signals from said reference source and the sum of the signals from said antenna and the output of said noise source; and means responsive to said error signal for controlling actuation of said switch.

3,777,271
GENERATION OF MICROWAVE FREQUENCY COMBS WITH NARROW LINE SPACING

Frederick John Telewski, Portland, Oreg., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 4, 1971, Ser. No. 186,367
Int. Cl. H01b *19/00*
U.S. Cl. 328—16 6 Claims

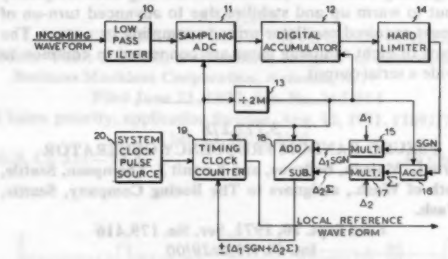


A harmonic generator such as a step recovery diode device is driven by two or more input signals of different frequencies to produce a comb spectrum consisting of lines at multiples of the input signal frequencies interspersed with lines at the frequencies of the intermodulation products.

3,777,272
DIGITAL SECOND-ORDER PHASE-LOCKED LOOP

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention of; Jack K. Holes, 9412 Cattaraugus, Los Angeles; Christopher Carl, 420 S. Madison, Apt. 209, Pasadena, and Carl R. Tegnelia, 1800 State St., South Pasadena, all of Calif.

Filed Sept. 18, 1972, Ser. No. 290,030
Int. Cl. H03k *9/00*; H03d *3/24*
U.S. Cl. 329—104 10 Claims

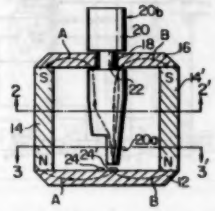


A digital second-order phase-locked loop is disclosed in which a counter driven by a stable clock pulse source is used to generate a reference waveform of the same frequency as an incoming waveform, and to sample the incoming waveform at zero-crossover points of the reference waveform. The samples are converted to digital form and accumulated over M cycles, reversing the sign of every second sample. After every M cycles, the accumulated value of samples is hard limited to a value SGN = ±1 and multiplied by a value Δ_1 equal to a number n_1 of fractions of a cycle. The SGN values are accumulated to form a value Σ which is multiplied by a value Δ_2 equal to a number n_2 of fractions of a cycle, where n_1 is greater than n_2. The product $\Delta_2\Sigma$ is added to the product Δ_1 SGN at the end of every M cycles to form an error signal in digital form. That error signal is used to advance or retard the counter according to the sign of the sum by an amount equal to the sum $\Delta_1 \text{SGN} + \Delta_2\Sigma$, this continually synchronizing the output waveform of the counter with the incoming waveform.

3,777,273
ANGULAR POSITION DETECTOR USING MAGNETIC ELEMENTS

Kosaku Baba, Yokohama City, and Kiyoshi Wazawa, Fujisawa City, both of Japan, assignors to Nissan Motor Company Limited, Yokohama City, Japan

Filed Apr. 27, 1972, Ser. No. 248,192
Claims priority, application Japan, Nov. 8, 1971, 46/88269
Int. Cl. H03d *1/46*
U.S. Cl. 329—200 4 Claims

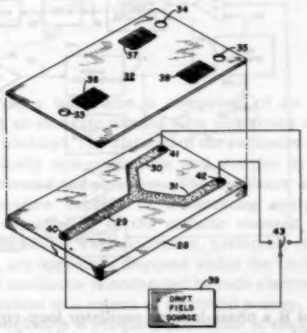


An angular position detector comprising means for establishing a magnetic field wherein a magnetic flux distributes in such a manner as to vary in accordance with the angular position of a rotary shaft. At least one pair of magnet effective elements each having a parameter varied in accordance with a density of a magnetic flux passing therethrough are placed in the magnetic field and incorporated in an electric circuit. The electric circuit connects the magnet effective elements in series to each other and impress a d-c voltage which is then divided into a voltage representing the variation of the parameter of the elements, namely, the angular position of the rotary shaft.

3,777,274
ELECTRONIC INTERACTION GUIDE STRUCTURE FOR ACOUSTIC SURFACE WAVES

David Abraham, Rockville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 32,315, April 27, 1970, abandoned. This application Jan. 18, 1972, Ser. No. 218,732
Int. Cl. H03f *3/04*
U.S. Cl. 330—5.5 12 Claims



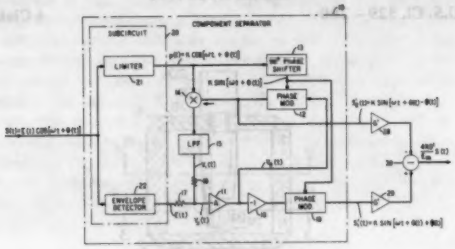
Acoustic surface waves are produced in a lossy piezoelectric material and are guided therealong due to the interaction between the acoustic waves and a drift electron flow established in an adjacent semiconductor matrial; i.e., the drift electrons impart energy sufficient to sustain propagation of the acoustic surface waves only in the desired direction defined by the drift electron path or channel.

3,777,275

LINEAR AMPLIFICATION WITH NONLINEAR DEVICES

Donald Clyde Cox, New Shrewsbury, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 31, 1972, Ser. No. 222,243
Int. Cl. H03f 3/38
U.S. Cl. 330—10 5 Claims



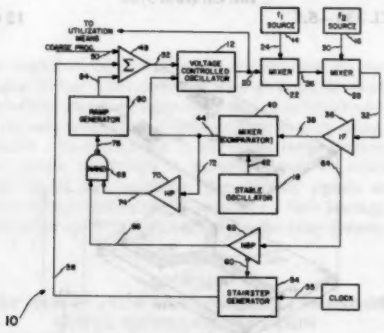
Available nonlinear amplifying devices are used to produce bandpass linear amplification of a signal having amplitude variations. The input signal is transformed into two constant amplitude phase modulated components which together contain in their phase fluctuations the total information content of the input. The components are amplified separately by devices which preserve phase, and the recombination of the amplified components reproduces a linearly amplified replica of the original input. The technique is primarily useful at high frequencies and can be modified to provide frequency translation.

3,777,276

PHASE LOCK LOOP WITH AUTOMATIC STEP BY STEP SEARCH SWEEP FOLLOWED BY LINEAR SEARCH SWEEP

Ira Klein, Brooklyn, N.Y., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 24, 1973, Ser. No. 326,225
Int. Cl. H03b 3/04
U.S. Cl. 331—4 8 Claims



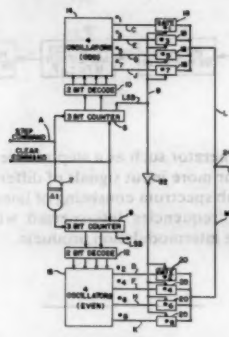
Disclosed is a phase-locking oscillator loop circuit in conjunction with automatic circuitry for searching for and forcing a phase locked condition with respect to a reference frequency, in which condition the oscillator of the loop operates at a frequency which is a function of first and second input frequencies. The automatic circuitry is characterized by means for step by step searching from a first coarse frequency approximation, with transition to a linear sweep until the lock frequency is achieved. The step by step search automatically reiterates if the desired frequency is passed.

3,777,277

DISCRETE STEP FREQUENCY SWEEP

Robert H. Naber, Mt. Vernon, N.H., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 23, 1973, Ser. No. 335,265
Int. Cl. H03b 23/00
U.S. Cl. 331—49 9 Claims



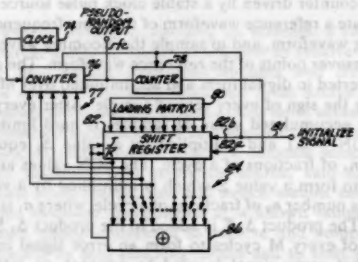
A frequency sweep generator for generating a repetitive series of constant amplitude, stable, discrete step frequency outputs. Eight crystal oscillators of increasingly higher frequencies are divided into odd and even groups of four oscillators each. Dual selecting circuits each comprising a three bit binary counter triggered by a periodic step command, a two bit decoder and four sampling gates, alternately select in numerical sequence one oscillator output from each of the groups. A delay circuit delays the step command one full period before triggering the even group binary counter. Each oscillator output is energized for a duration of two step command periods and the least significant bit of the odd group binary counter alternately selects the odd and even groups of parallel gates for a single step command period thus allowing each frequency output to warm up and stabilize due to advanced turn-on of the next required oscillator prior to sampling its output. The outputs of eight sampling gates are connected in common to provide a serial output.

3,777,278

PSEUDO-RANDOM FREQUENCY GENERATOR

Henrie L. Majeau, Bellevue, and Kermit J. Thompson, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sept. 10, 1971, Ser. No. 179,416
Int. Cl. H03b 29/00
U.S. Cl. 331—78 6 Claims



A frequency generator includes a clock source, a variable modulus counter, a fixed-modulus counter, a shift register and an exclusive-OR circuit. In order to obtain a truly pseudo-ran-

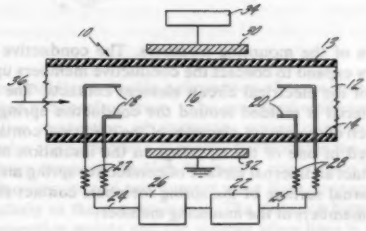
dom sequence of frequencies at the output of the variable-modulus counter, for use in coding voice intercommunications or the like, pulses derived from the pseudo-random frequencies by the fixed modulus counter are used to clock the shift register which develops the pseudo-random sequence in conjunction with the exclusive-OR circuit and the variable-modulus counter.

3,777,279

DEPOSITION OF POWER IN A MOVING GAS STREAM BY ELECTRIC DISCHARGE MEANS

Alan C. Eckbreth, Glastonbury; Arthur E. Mensing, East Hartford, and Russell G. Meyerand, Jr., Glastonbury, all of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Mar. 30, 1972, Ser. No. 239,736
Int. Cl. H01s *3/09*, *3/22*
U.S. Cl. 331—94.5 **8 Claims**



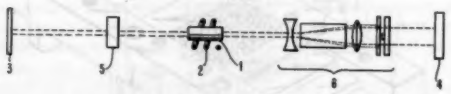
An alternating electric field is capactively coupled to a direct current electric discharge to enhance the power deposition while maintaining the discharge in a diffuse glow mode. The invention is explained in the practical context of laser applications.

3,777,280

LASER GENERATOR OF TE WAVE GUIDE MODES

Dieter Pohl, Adliswil, Switzerland, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed June 21, 1972, Ser. No. 265,014
Claims priority, application Sweden, Aug. 12, 1971, 11891/71
Int. Cl. H01s *3/10*
U.S. Cl. 331—94.5 **19 Claims**



Propagating radiation with rotationally symmetric optical modes of the TE_{01} (and TM_{01}) type show promising properties for future applications. For their generation, laser cavities inherently enhance the rotationally symmetric TEM^*_{01} (and TEM^*_{10}) laser modes. These cavities must suppress the otherwise usual fundamental TEM_{00} mode, and in addition discriminate against unwanted same order modes like the linearly polarized TEM_{01} and TEM_{10} laser modes.

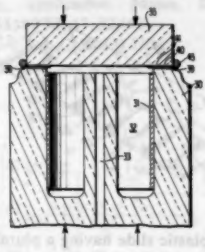
A birefringent crystal zero degree calcite inserted into the cavity applies higher losses at the aperture to the extraordinary beam showing the TEM^*_{10} mode. Thus, the ordinary beam showing the wanted TEM^*_{01} laser mode is favored. Mode selection is further assisted by a Galilean telescope-like setup of the crystal. Discrimination against fundamental mode and higher order modes may be improved by the insertion of circular or ring shaped apertures in the telescope arrangement.

3,777,281

SEAL AND METHOD OF MAKING SAME

Urs E. Hochuli, 7011 Southwork Ter., Hyattsville, Md.

Filed Aug. 3, 1970, Ser. No. 60,401
Int. Cl. H01s *3/02*
U.S. Cl. 331—94.5 **8 Claims**



Gold films are used as an alloying flux to form 5 micron thick film seals mostly below 300°C. Pyrex was sealed to Quartz, ULE*, Cervit*, Germanium, Gallium Arsenide, (GaAs), invar and copper. The seals can also be used as current feed throughs and as graded seals and are particularly applicable to gas laser devices.

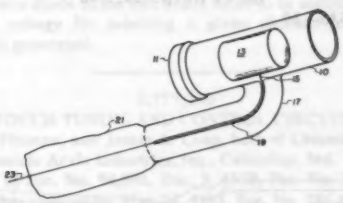
*Trademarks

3,777,282

METAL VAPOR LASER TUBE

William E. Richards, El Cajon, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 3, 1972, Ser. No. 223,201
Int. Cl. H01s *3/02*, *3/22*; H01j *61/26*
U.S. Cl. 331—94.5 **6 Claims**



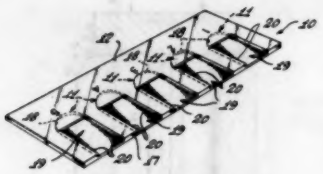
A metal vapor laser tube is comprised of an enclosure preferably in an elongate tubular form containing an amount of a metallic element. The material of the enclosure is selected to be electrically non-conductive and also for its ability to withstand elevated temperatures. The enclosure also has at least one window capable of transmitting energy at the wavelength of emission of the metallic element contained within the enclosure. Two electrodes, preferably in the form of cylinders, are oppositely disposed within the enclosure and an electrical conductor is connected to each electrode for external connection to a source of electrical energy. An extension of the enclosure is provided proximate to each electrode for containing the respective electrical conductors within a hollow capillary portion of the extension and also including an end portion of the extension which is sealed around the terminal of the electrical conductor to render it pressure-tight. The tube may be fabricated of quartz and the end portions of the extensions may comprise glass sealed to the quartz of the extensions which include the hollow capillary portion and also sealed around the terminal of each respective electrical conductor.

3,777,283

TRANSPARENT SLIDE FOR THE EXAMINATION OF LIQUID SPECIMENS

Carlos D. Elkins, 1414 S. Fairplain Ave., Whittier, Calif.

Filed Apr. 21, 1972, Ser. No. 246,203
Int. Cl. G02b *21/34*
U.S. Cl. 331—94.5 **8 Claims**



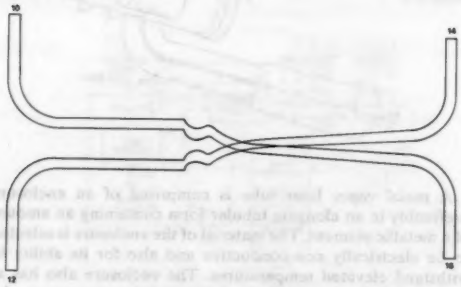
A transparent plastic slide having a plurality of covered examination chambers defined between generally parallel and uniformly spaced sidewalls integral with the slide, to hold specimen liquid in layers of substantially uniform depth for examination. Each chamber is formed as a laterally opening pocket having a semi-circular edge wall and an open side facing toward one edge of the slide, and a channel extends from each open side to the edge of the slide. The sidewalls are sufficiently close together to cause specimen liquid to be drawn into, and to fill, the chamber by capillary action when a quantity of the liquid is placed in the channel at the open side, such capillary action being sufficient to hold the liquid in the chamber when the edge of the slide is tapped gently against a suitable surface to remove excess liquid from the channel.

3,777,284

DIRECTIONAL PHASE-SHIFTING COUPLER

Richard V. Schultz, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 27, 1972, Ser. No. 238,266
Int. Cl. H01p *5/14, 3/08*
U.S. Cl. 333—10 **5 Claims**



A coupling technique for selectively obtaining, within limits, any amplitude and phase relationship between the coupled and through ports of a stripline coupler.

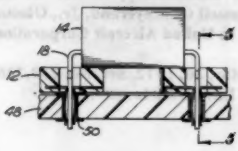
3,777,285

ELECTRICAL SOCKET ADAPTOR MEMBER

John Edward Barr, Brea, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed June 19, 1972, Ser. No. 263,926
Int. Cl. H05k *1/02*
U.S. Cl. 339—17 CF **3 Claims**

An electrical socket adaptor member for interconnecting an electrical circuit element having a plurality of electrical contacts extending therefrom with a mounting member having conductive members positioned therein. A body of insulation material has a plurality of openings extending from a first side of the insulating material to a second side thereof. Conductive spring members in the insulation have a portion secured from the periphery of the openings and extending away from the conductive material. The conductive spring members have a portion thereof which is expandable to contact the conductive members of the mounting members. The conductive spring members expand to contact the conductive members upon insertion of the electrical circuit element contacts. The insulation material is molded around the conductive spring members. Each of the circuit elements of the electrical contacts are positioned in one of the openings in the insulation material and contact an internal surface of conductive spring members. The external surface of the spring members contact the conductive members of the mounting member.

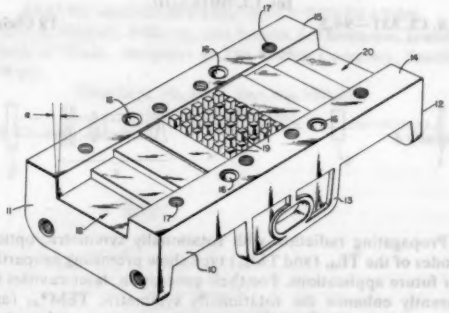


3,777,286

DIE CAST WAVEGUIDE LOW PASS FILTER

Herman W. Cramm, Rolling Hills Estates; Clifford L. Gorby, Englewood, and Juri G. Leetmaa, Los Angeles, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Aug. 7, 1972, Ser. No. 278,667
Int. Cl. H03h *7/10, 9/00*
U.S. Cl. 333—70 S **6 Claims**



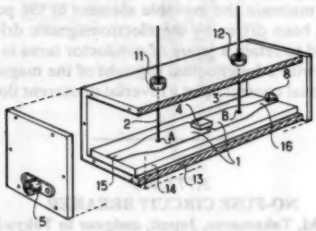
A microwave low pass filter of the so-called "waffle iron" type is disclosed. The filter utilizes die cast construction techniques and cast-in dowel holes for dimensional fidelity, close tolerances and precise alignment. The filter uses fewer parts than previous devices and can be easily assembled without the use of jigs, fixtures or special bonding techniques. Die cast construction techniques are made possible in the filter design by departing from the optimum electrical design of such components.

3,777,287

WIDE BAND POLARIZING T-CONNECTION

Guy Louvel, Antony, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed June 26, 1972, Ser. No. 266,018
Claims priority, application France, June 25, 1971, 7123371
Int. Cl. H01p 5/08, 3/08
U.S. Cl. 333—84 M 4 Claims



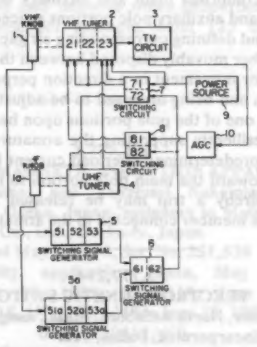
Device enabling a double polarization of two active circuits connected in hyperfrequency to be produced while avoiding a prohibitive proportion of stationary waves comprising two microstrips connected by a capacitor for blocking the continuous voltage ensuring the high frequency connection between the active circuits and two quarter wave lines connected perpendicularly to these microwaves. The distance between the two connection points and the quarter wave lines is equal to three quarters of a wavelength of the central frequency of the operation band.

3,777,288

PLURAL BAND CHANNEL SELECTOR HAVING SELECTOR KNOBS CONTROLLING RESPECTIVE ONES OF A PLURALITY OF TUNERS

Osamu Fujita, and Takaya Kitao, both of Fujisawa, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed May 25, 1972, Ser. No. 256,743
Claims priority, application Japan, May 31, 1971, 46/37951
Int. Cl. H03j 5/12
U.S. Cl. 334—1 8 Claims



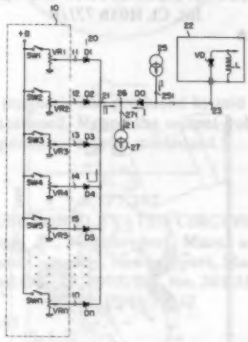
A channel selector is provided which has means for detecting the channel selector knobs of a VHF and UHF tuner touched by a viewer so that in response to the signal from the detecting means, the VHF or UHF tuner may be automatically energized whereas the other tuner is deactivated. Thus, only the desired tuner is energized in channel selection, and the channel selection may be made in one step.

3,777,289

SELECTOR HAVING CONSTANT CURRENT SOURCES AND COMPENSATING DIODE FOR REDUCING AMBIENT TEMPERATURE EFFECTS ON VARACTOR TUNER

Shinichi Makino, Fujisawa, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed Dec. 14, 1972, Ser. No. 314,948
Claims priority, application Japan, Dec. 16, 1971, 46/101404; Mar. 31, 1972, 47/32443
Int. Cl. H03j 5/04
U.S. Cl. 334—15 7 Claims



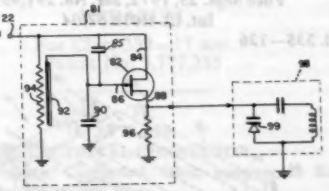
A channel selecting apparatus comprising a D.C. voltage source for generating different amounts of D.C. voltage corresponding to the respective channels, a plurality of channel diodes connected to the D.C. voltage, a common compensation diode connected between the diodes and an electronic tuner, the common compensation diode having the same characteristics as the channel diodes, and a pair of constant current sources for supplying currents to the channel diode and the compensation diode, thereby enabling the variable capacitance diode of the electronic tuner to be supplied with a specific voltage for selecting a given channel exactly as originally generated.

3,777,290

TOUCH TUNING AND CONTROL CIRCUITS

Carl R. Pittman, and James A. Long, both of Columbus, Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Division of Ser. No. 94,896, Dec. 3, 1970, Pat. No. 3,691,298.
This application May 24, 1972, Ser. No. 256,403
Int. Cl. H03j 3/06
U.S. Cl. 334—15 5 Claims



An electronic circuit for adjusting the volume and tone of an audio signal is controlled by appropriately bridging contacts included therein with a human finger or other conductive means. The length of time that a contact is bridged, or closed, determines the conductive state of a field effect transistor associated therewith. One such FET controls the gain of an audio amplifier whereby the amplitude of the audio signal is controlled. The conductive state of a second such FET con-

trols the biasing voltage on a junction transistor to control the shunting of the high frequency components of the audio signals.

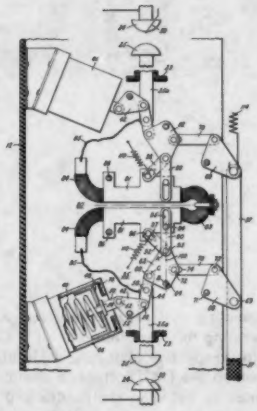
The audio output is coupled to varactor tuning means so that a change in the conductive state of an FET changes the frequency to which the varactor tuning means is tuned.

3,777,291

ELECTRIC SWITCH WITH MAGNETIC-ASSIST MEANS TO ASSIST SWITCH IN CLOSING AND REMAINING CLOSED AGAINST HIGH CURRENTS

Peter J. Kroon, Swarthmore, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Nov. 20, 1972, Ser. No. 308,155
Int. Cl. H01h 77/10
U.S. Cl. 335—16 **11 Claims**



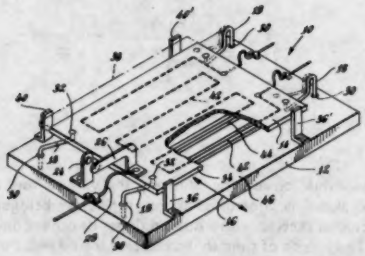
An electric switch includes magnetic-assist means for assisting the switch in closing and remaining closed against high currents. The magnetic-assist means develops a magnetic force acting in a switch-closing direction, even when the switch contacts are substantially fully separated. A toggle-type linkage connected between the magnetic-assist means and the movable contact of the switch limits to a relatively low value the portion of the magnetic force transmitted to the movable contact until the movable contact has passed through a substantial portion of its closing stroke.

3,777,292

LINEAR MOTOR RELAY

John E. Fulenwider, Concord, Mass., assignor to GTE Laboratories Incorporated, Waltham, Mass.

Filed Sept. 25, 1972, Ser. No. 291,959
Int. Cl. H01h 67/04
U.S. Cl. 335—126 **15 Claims**



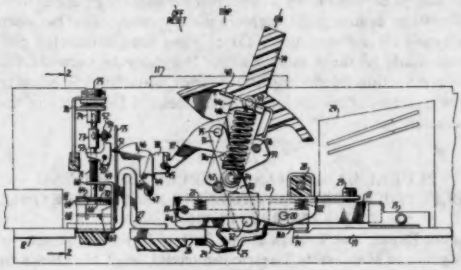
A linear motor relay is described for use in controlling switches and the like. The relay includes an electromagnetic drive in the form of a generally planar movable element and a generally planar stationary element. In one embodiment, a printed circuit conductor pattern is located on one element for coaction with longitudinal segments of a magnetic field produced by strips of unipolar permanently magnetic material located on the other element. In another embodiment an electromagnetic drive is obtained with coacting planar windings located on both the movable and stationary elements. A small layered structure may be formed capable of high output force for controlling a plurality of switches. A latching feature is provided to maintain the movable element in the position to which it has been driven by the electromagnetic drive. Stops are employed to retain a group of conductor turns in coacting relationship with a longitudinal segment of the magnetic field for bidirectional control upon a reversal of current flow.

3,777,293

NO-FUSE CIRCUIT BREAKER

Satoru Tuzuki, Takamatsu, Japan, assignor to Tokyo Shibaura Electric Company, Ltd., Kawasaki-shi, Kanagawa-ken, Japan

Filed Oct. 30, 1972, Ser. No. 302,270
Int. Cl. H01h 71/74
U.S. Cl. 335—176 **8 Claims**



A no-fuse circuit breaker having a releasable contact mechanism and a trip mechanism therefor, wherein the trip mechanism comprises main and auxiliary magnetic circuits having main and auxiliary pole portions spaced apart in parallel relation and defining corresponding air gap portions, an armature member movably disposed between the main and auxiliary poles for movement in a direction perpendicular to the pole portions and being arranged to be adjustable in distance from at least one of the pole portions upon being rotated, and means for resiliently supporting the armature member such that when a predetermined overload current flows, the armature moves toward the main pole portion to reduce the main air gap, whereby a trip may be released by engagement therewith of a member connected to the armature.

3,777,294

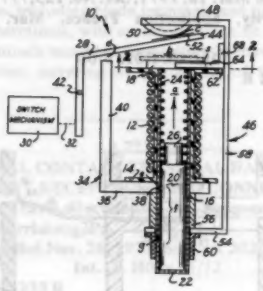
ELECTROMAGNETIC SWITCH

Aime J. Grenier, North Attleboro, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 20, 1972, Ser. No. 308,206
Int. Cl. H01f 7/08
U.S. Cl. 335—236 **10 Claims**

An electromagnetic switch having a flux producing solenoid and a movable armature attractable to the solenoid upon the occurrence of a predetermined current level and duration is provided with flux path means in the form of members of low reluctance arranged so that the flux circuit comprises a plurality of loops, each loop having one or more reluctances which are variable and dependent upon the position of a

movable core located within the solenoid and the position of the armature. The arrangement is such that increased pulse resistance is obtained without substantially effecting the operation of the switch upon sustained overloads of a predetermined amount and duration.



3,777,295

MAGNETIC PARTICLE CORE

Alfred M. Laing, Butler, Pa., assignor to Magnetics, Inc., Butler, Pa.

Division of Ser. No. 80,476, Oct. 16, 1970, Pat. No. 3,666,571, which is a division of Ser. No. 714,805, March 21, 1968, Pat. No. 3,607,462. This application Apr. 3, 1972, Ser. No. 240,858

Int. Cl. H01f 3/00

U.S. Cl. 335—297 10 Claims

Magnetic particle cores suitable for phase shifting applications having a permeability substantially above 275 and core losses below 0.24 ohms per henry per unit of inductance at 1800 Hertz are produced by a novel combination of steps including one or more of the following: reduction of pre-powder anneal additives, selective distribution of magnetic particle sizes, adding flexibility to the electrical insulation applied to the magnetic particles, elevated pressure compacting, surface etching of the pressure compacted core after hydrogen anneal, and an oxidation heat treatment following surface etching. Surface etching and oxidation combine to increase the breakstrength and improve other properties of various permeability cores, for example, from 125 through 300 permeability.

3,777,296

ELECTROMAGNETIC INDUCTION APPARATUS

Masayuki Ohyama, and Takefumi Nakamizo, both of Toyonaka-shi, Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

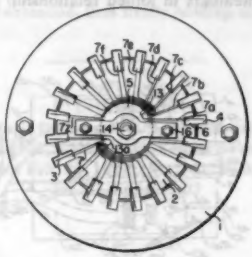
Filed May 8, 1972, Ser. No. 251,539

Claims priority, application Japan, May 10, 1971, 46/31016; June 16, 1971, 46/43119; June 18, 1971, 46/44372; June 18, 1971, 46/44404; June 18, 1971, 46/44405

Int. Cl. H01f 21/00

U.S. Cl. 336—120 18 Claims

An electromagnetic induction apparatus is provided which comprises outer and inner cores and first and second windings on the outer and inner cores. Depending upon the relative angular position between the first and second windings the effects of the magnetic fluxes produced by the first and second windings upon the other or the degree of the inductive coupling between the first and second windings may be varied, so that the output voltage may be varied accordingly. That is, the magnetic flux which is produced by one winding remains unchanged in magnitude, and links the other winding, changes its direction, or the number of turns of the other winding linked with the magnetic flux produced by said one winding is increased or decreased. Hence the output voltage is varied. The leakage impedances may be minimized.



3,777,297

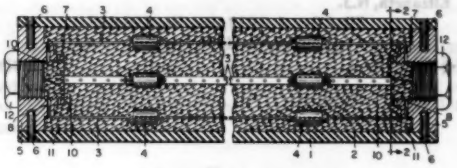
ELECTRIC FUSE FOR ELEVATED CIRCUIT VOLTAGES

Edward J. Knapp, Jr., Newburyport, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed Oct. 27, 1972, Ser. No. 301,356

Int. Cl. H01h 85/12

U.S. Cl. 337—161 9 Claims



An electric fuse having plug terminals conductively interconnected by fuse links has means forming part of the plug terminals and performing the dual function of (1) forming lugs for conductively connecting the fuse links to the plug terminals and of (2) positively positioning the ends of the fuse links relative to the plug terminals preparatory to establishing the aforementioned conductive connection between the fuse links and the plug terminals.

ERRATUM

For Class 339—17 see:
Patent No. 3,777,285

3,777,298

ELECTRICAL CONNECTOR

Albert P. Newman, Cincinnati, Ohio, assignor to Empire Products, Inc., Cincinnati, Ohio

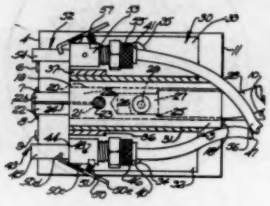
Filed Dec. 2, 1971, Ser. No. 204,194

Int. Cl. H01r 3/04

U.S. Cl. 339—16 R 9 Claims

A connector for electrical and fluid conduits. The connector comprises first and second body members, the first body member having one or more male electrical contacts and one or more male fluid conduit couplers. The second body member has one or more female electrical contacts and one or more female fluid conduit couplers. The first and second body members are adapted to be joined in abutting relationship

with their respective male and female electrical contacts and their respective male and female fluid conduit couplers in engagement. Latch means are provided to maintain the first and second body members in joined relationship and protective



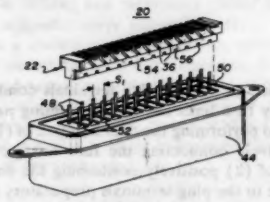
means are provided for the various male and female electrical contacts and male and female fluid conduit couplers when the first and second body members are in their joined or separated conditions.

3,777,299

WIRING ADAPTER

Earl F. Nickerson, Langhorne, and John M. Cole, New Hope, both of Pa., assignors to Thomas & Betts Corporation, Elizabeth, N.J.

Filed Oct. 6, 1972, Ser. No. 295,605
Int. Cl. H05k *1/04*
U.S. Cl. 339—17 L **19 Claims**



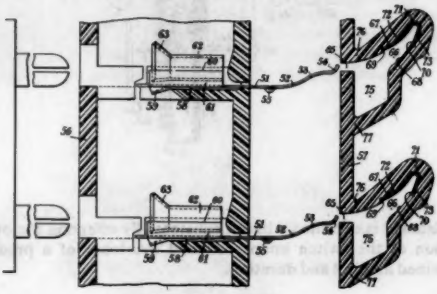
A wiring adapter for disposition intermediate a plurality of first conductors having a first predetermined spacing and a plurality of second conductors having a second predetermined spacing different than the spacing between the first conductors to permit a convenient, simple, and rapid interconnection therebetween. The device comprises a generally elongate base member formed preferably of electrically insulating material and having a series of generally parallel transverse first recesses disposed in one surface thereof and two further series of recesses each series extending down a respective surface on either side of the base member, the series of recesses on one side communicating with the even ones of the first series of recesses and the recesses extending down the other side of the base member communicating with the odd ones of the first series of recesses. The side recesses extend at an oblique angle with respect to the longitudinal axis of the base member, each pair of alternated, opposed side recesses generally defining a Vee, the apex of which is arranged to engage a respective pair of aligned parallel conductors in a socket member or the like, wherein the pitch of the parallel conductors may be selectively altered to conform to that defined by the series of first recesses.

3,777,300

SAFETY OUTLET AND PLUG DEVICE

Philippe De Villemeur, Maisons Alfort, France, assignor to Etablissements A. Gregoire et L. Barilleau, Alfort, France

Filed Mar. 18, 1971, Ser. No. 125,777
Claims priority, application France, Mar. 19, 1970, 7009881
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **4 Claims**



This safety current outlet and plug device is preferably of the continuous type, i.e. constituting a kind of skirting-board along a wall or the like. The electric contact between the prongs of the cap, plug or connector and the electric conductors of the current outlet is obtained by causing the elastic deformation of the prongs consisting to this end of a very flexible conducting and elastic metal blade of very reduced thickness, for instance of the order of 0.1 to 0.3 millimeter, of which the front portion is adapted to engage a rigid surface of the female member which produces a substantial deformation of said blade which is sufficient for ensuring a satisfactory and reliable electric contact between said blade and an electric conductor inserted in said current outlet.

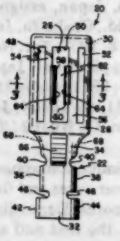
Thus, a current outlet may be obtained wherein any direct access to anyone of its conductors is positively prevented when using a rigid member, so that a safety current outlet is obtained.

3,777,301

TERMINALS AND CONNECTORS FOR INTERCONNECTING CONDUCTORS AND MALE CONTACTS

Leonard H. Michaels, Warrenville, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Nov. 29, 1972, Ser. No. 310,329
Int. Cl. H01r *9/08*
U.S. Cl. 339—217 S **13 Claims**



A generally dish-shaped terminal includes female contact structure for receiving a projecting male terminal and includes

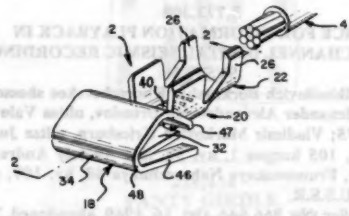
a wire gripping portion. The contact structure includes two or more arms integral at both ends with a planar portion of the terminal, and each arm carries a contact segment interfacing with similar contact segments to receive male terminals of different shapes, including blade terminals and round and square post or pin terminals, with an interference fit. Connectors including terminals mounted in cavities in insulating housings are used when covering or protecting of the terminals is desired.

3,777,302

ELECTRICAL CONTACT TERMINAL HAVING CLOSED ENTRY RECEPTACLE AND CONNECTOR

Allen Edwin Travis, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Nov. 26, 1971, Ser. No. 202,325
Int. Cl. H01r *15/12*
U.S. Cl. 339—223 R **1 Claim**



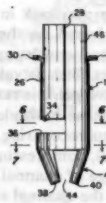
Stamped and formed electrical contact terminal comprises a crimp portion of U-shaped cross section and a contact portion in the form of a tongue extending from the crimp portion. The tongue is reversely bent and has a locking section extending into the crimp portion. Upon crimping of the crimp portion onto a wire, the locking section is locked to the crimped connection to provide a closed entry receptacle. Connector housing for the disclosed terminal has a cavity such that the terminal need not be preferentially oriented during insertion.

3,777,303

HOLE LINER FOR PRINTED CIRCUIT BOARDS

Cletus McDonough, Elmhurst, Ill., assignor to Molex Incorporated, Downers Grove, Ill.

Filed Mar. 15, 1972, Ser. No. 234,958
Int. Cl. H01r *11/22*; H05k *1/18*
U.S. Cl. 339—258 R **5 Claims**



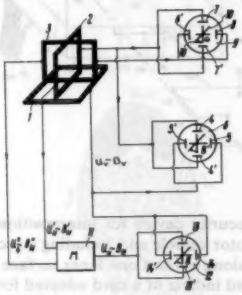
A hole liner includes a metal body insertable into a hole in a printed circuit board for holding a component lead to be soldered to the board. An upper stop limits insertion, while a resilient latch near the lower end of the body engages the lower surface of the board to prevent withdrawal of the liner. The lower end of the body includes jaws for gripping a component lead inserted into the liner, and at least one of the jaws is connected to the resilient latch. The outer surfaces of the jaws are angled inwardly to aid insertion of the body into the hole, and upon insertion the jaws contract and the latch is resiliently forced inwardly. Upon full insertion the latch moves to its latching position in engagement with the undersurface of the board. The mouth or gap defined by the jaws is smaller than the component lead, so that when the lead is inserted the latch is further extended, thus firmly holding the liner in place on the board.

3,777,304

INDICATOR

Tore Gulich, Marie Dalsvagen 48 D, Malmo, and Lennart Stigmark, Fack 24500, Staffanstorp, both of Sweden

Filed Feb. 28, 1972, Ser. No. 230,055
Int. Cl. G01r *33/02*
U.S. Cl. 340—4 R **4 Claims**



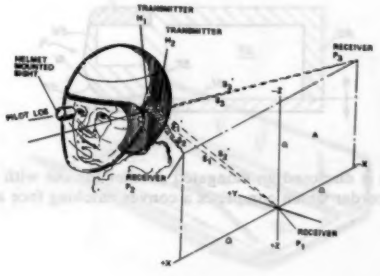
This invention relates to an indicating device for the navigation of vehicles along power cables, especially of ships along underwater cables, wherein a system of coils is mounted on the ship, which coils are adapted to sense the magnetic field surrounding the cables.

3,777,305

ULTRASONIC ANGLE MEASUREMENT SYSTEM

Ronald G. Stoutmeyer, China Lake, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 10, 1972, Ser. No. 242,540
Int. Cl. G01s *5/18*
U.S. Cl. 340—16 R **8 Claims**

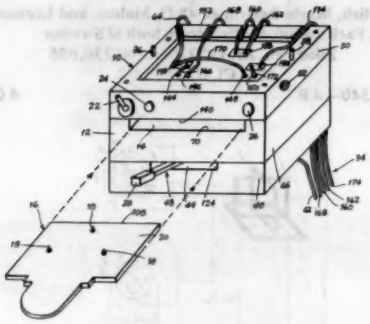


An ultrasonic angle measuring system having three system-spatially fixed receivers and two transmitters mounted on a helmet wherein the time lapse information at the receivers of signals from the transmitters establishes the location and orientation of the helmet with respect to a reference position.

3,777,306
VEHICLE ELECTRONIC SECURITY DEVICE

Lester T. Speickhoff, St. Louis, Mo., assignor to Arthur G. Simpson, St. Louis, Mo., a part interest

Filed Oct. 16, 1972, Ser. No. 297,593
Int. Cl. B60r 25/04
U.S. Cl. 340—64 14 Claims



An electronic security device for interposition in the ignition circuit of a motor vehicle and including a receptacle having coded indicia along at least one inner surface thereof corresponding to coded indicia of a card adapted for insertion in the receptacle, and transport means for transporting the card within the receptacle to cause juxtaposition of the coded indicia of the card with the coded indicia of the receptacle, the device including primary electrical switch means electrically connected therein so that juxtaposition of the coded indicia closes the ignition circuit through the device.

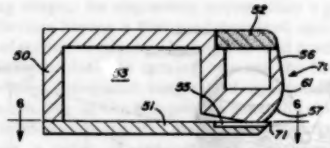
ERRATUM

For Class 340—147 see:
Patent No. 3,777,308

3,777,307
CATCHER FOR A JET DROP RECORDER

Peter L. Duffield, Kettering, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Dec. 20, 1972, Ser. No. 317,073
Int. Cl. G01d 15/18
U.S. Cl. 346—75 11 Claims

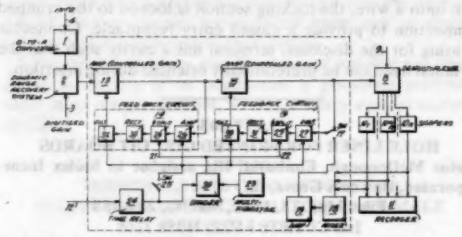


There is disclosed an elongated catcher for use with a jet drop recorder which comprises a convex catching face and a recessed drop ingesting blade. The catcher is preferably grounded and positioned in spaced relation to an electrically charged deflection ribbon so as to create a static electrical field between the deflection ribbon and the face of the catcher. Drops of recording fluid which are deflected by the electrical field impact against the backwardly sloping upper portion of the catching face and then flow downwardly along the curving surface of the catching face to the upper surface of the blade. The captured recording fluid, which has preferably spread out into a continuous film, is then ingested into an internal cavity via a series of channels in the upper surface of the blade. To prevent build up of accumulated spray at the top of the catcher there is provided a porous upper surface which connects with a special compartment within the catcher. This compartment is separate from a larger main compartment into which is delivered the ink which is ingested by the blade. Each of these compartments has its own vacuum source for drawing off the liquid accumulated therein.

3,777,308
DEVICE FOR INFORMATION PLAYBACK IN MULTICHANNEL DIGITAL SEISMIC RECORDING SYSTEM

Gennady Mikhailovich Borkovsky, Khoroshevskoe shosse, 16, kv. 11; Alexander Alexandrovich Drozdov, ulitsa Valovaya, 6/8, kv. 75; Vladimir Markovich Kriesburg, ulitsa Junykh Lenintsev, 105 korpus 1, kv. 59, and Anatoly Andreevich Tsukanov, Frunzenskaya Naberezhnaya 48, kv. 107, all of Moscow, U.S.S.R.

Division of Ser. No. 866,944, Oct. 16, 1969, abandoned. This application July 6, 1972, Ser. No. 269,405
Claims priority, application U.S.S.R., Oct. 16, 1968, 1277321; Dec. 26, 1968, 1294493
Int. Cl. G01v 1/28; H03k 13/00
U.S. Cl. 340—147 CN 2 Claims

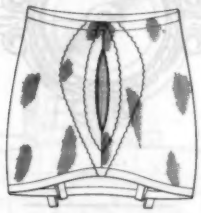


A device for information playback in multichannel digital seismic recording systems based on the compression of the dynamic range of signals and consisting in that information recorded in digital multiplex form as values of signal samples in channels having respective gains is read off the carrier and converted into amplitude pulse multiplex signals accounting for the respective gains, thus recovering the original dynamic range of signals of a channel, compressing in a similar manner the recovered dynamic range of channel signals to a value acceptable for visual display, the channel signals obtained in the compressed dynamic range being demultiplexed and visually displayed.

DESIGNS

DECEMBER 4, 1973

229,453
GIRDLE
Sallyann Zanca Salisky, Westwood, N.J., assignor to International Playtex Corporation, New York, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,528
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24



229,454
PANTY GIRDLE
Sallyann Zanca Salisky, Westwood, N.J., assignor to International Playtex Corporation, New York, N.Y.
Filed Sept. 2, 1971, Ser. No. 177,527
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

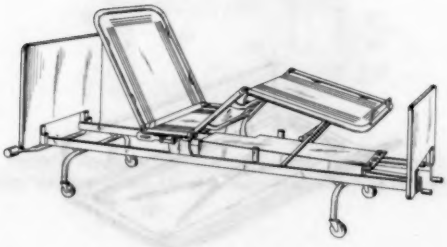
229,455
BRASSIERE
Frank C. Wolfson, New York, N.Y., assignor to International Playtex Corporation, New York, N.Y.
Filed May 10, 1971, Ser. No. 142,111
Term of patent 14 years
Int. Cl. D2—*01*
U.S. Cl. D2—24

229,456
SHOE SOLE
Stanley Norman Plampton, East Tilbury, and Leonard Philip John Spooner, Grays, England, assignors to Bata Shoe Company, Incorporated, Belcamp, Md.
Filed Apr. 24, 1972, Ser. No. 247,223
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—321

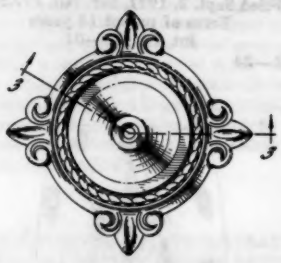
229,457
CHILD'S DRESSING TABLE OR SIMILAR ARTICLE
Nathanael W. Mathieson, Meadow Lark Road, Vernon, Conn. 06086
Filed Dec. 17, 1970, Ser. No. 26,544
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—14

229,458
DISPLAY CUBE WITH PEDESTAL STAND
Marshall C. Schneider, Newton Center, Mass., assignor to Charles D. Burnes Co.
Filed May 26, 1971, Ser. No. 147,296
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—20

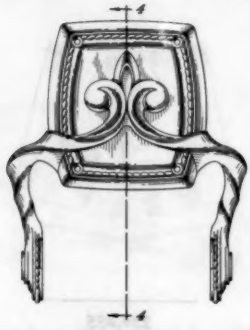
229,459
BED
Roland A. Benoit, Danielson, and Richard H. Duprey, Dayville, Conn., assignors to Interroyal Corporation, New York, N.Y.
Filed Aug. 23, 1972, Ser. No. 282,950
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—79



229,460
POST FOR SOAP DISH HOLDERS OR THE LIKE
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,445
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—86

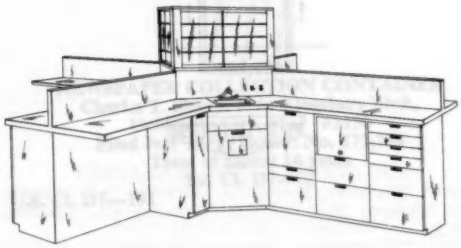


229,461
TISSUE HOLDER
Raymond U. H. Tegner, Lodi, Wis., assignor to Amerock Corporation, Rockford, Ill.
Filed Nov. 10, 1972, Ser. No. 305,268
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—97

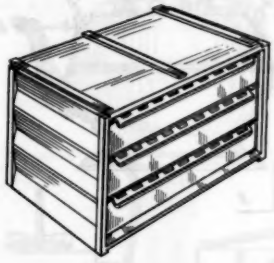


229,462
DISPLAY RACK FOR SHOES
Michael Wahl, Searington, Long Island, N.Y., assignor to Wahl Associates, Inc., Long Island City, N.Y.
Filed May 20, 1971, Ser. No. 145,590
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—116

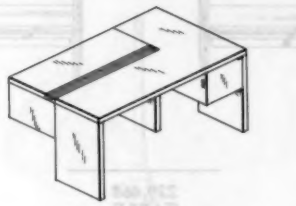
229,463
CABINET AND SERVICE UNIT FOR DENTAL CLINICS, DENTAL OFFICES AND THE LIKE PROVIDING A PLURALITY OF CUBICLES
Kenneth C. Marshall, Clayton, Mo., Peter G. Sotiropoulos, Belleville, Ill., and Anton M. Piros, St. Louis County, Mo., assignors to The Orthodontic Education and Research Foundation, St. Louis, Mo.
Filed Aug. 2, 1971, Ser. No. 168,511
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—162

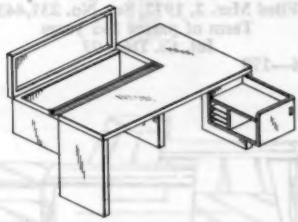


229,464
STACKABLE CHEST OF DRAWERS
Alfredo Martini, Via della Giardina, Monza, Italy
Filed Oct. 12, 1970, Ser. No. 25,474
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—165

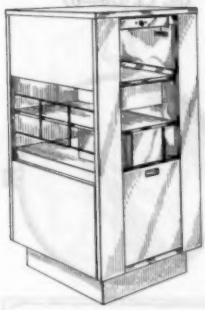


229,465
DESK
Franz Hero and Karl Odermatt, Stafa, Zurich, Switzerland, assignors to Interlubke Gebr. Lubke KG, Wiedenbruck, Germany
Filed Feb. 28, 1972, Ser. No. 229,628
Claims priority, application Germany Aug. 26, 1971
Term of patent 7 years
Int. Cl. D6—*04*
U.S. Cl. D6—168



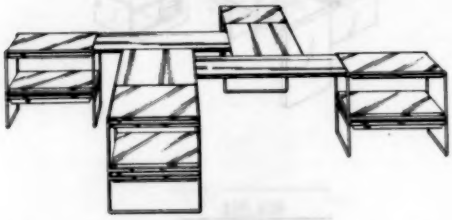


229,466
DISPLAY, DISPENSING AND STORAGE CABINET
Harvey J. Smith, Greensboro, N.C., assignor to Modern Metal Products Company, Greensboro, N.C.
Filed Sept. 17, 1971, Ser. No. 181,646
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—170

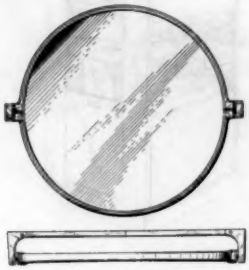


229,467
TABLE
Arnold P. Ginsburg, Los Angeles, Calif.
(1794 Kelton Ave., West Los Angeles, Calif. 90025)
Filed Mar. 1, 1972, Ser. No. 231,064
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—179

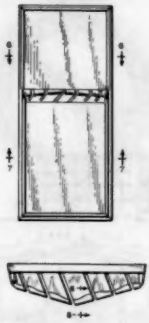
229,468
TABLE
Arnold P. Ginsburg, Los Angeles, Calif.
(1794 Kelton Ave., West Los Angeles, Calif. 90025)
Filed Mar. 2, 1972, Ser. No. 231,443
Term of patent 3½ years
Int. Cl. D6—*03*
U.S. Cl. D6—179



229,469
MIRROR
Jacques Firdmann, Venon, France, assignor to Etablissements Allibert, Monestier-de-Clermont, Isere, France
Filed Mar. 23, 1972, Ser. No. 237,612
Claims priority, application France Sept. 24, 1971
Term of patent 7 years
Int. Cl. D6—*07*
U.S. Cl. D6—243



229,470
KNIFE HOLDER OR SIMILAR ARTICLE
Ross F. Pollard, Amesbury, Mass., assignor to Towle Manufacturing Company, Newburyport, Mass.
Filed Sept. 5, 1972, Ser. No. 286,021
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—74

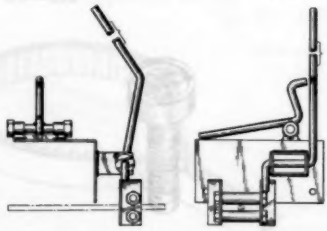


229,471
ICE BUCKET
George Biondi, Via del Parione 6, Florence, Italy, and Renzo Fanucchi, Via Provenciale, Lucchese 6, Pescia, Italy
Continuation-in-part of design application Ser. No. 24,539, Aug. 17, 1970, which is a continuation of design application Ser. No. 14,788, Dec. 4, 1968, both now abandoned. This application Mar. 3, 1971, Ser. No. 120,793
Claims priority, application Italy June 5, 1968
Term of patent 3½ years
Int. Cl. D7—*02*
U.S. Cl. D7—78

229,472
KNIFE
Walter Wells Collins, Atlanta, Ga., assignor to Adventure Products, Inc., Atlanta, Ga.
Filed Apr. 4, 1972, Ser. No. 241,100
Term of patent 14 years
Int. Cl. D7—*03*
U.S. Cl. D7—150

229,473
NEWSPAPER COLLECTION CONTAINER
Charles T. Henry, 7114 Kingsbury Blvd., University City, Mo. 63130
Filed July 18, 1972, Ser. No. 272,764
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—191

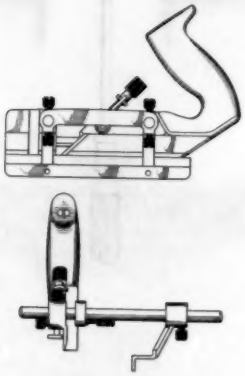
229,474
POULTRY HOUSE TRACTION CABLE CLAMP
Gerald L. Kitson, 9709 Belding Road, Rockford, Mich. 49341
Filed July 28, 1971, Ser. No. 167,083
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D8—44



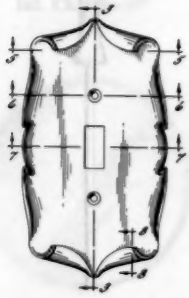
229,475
SCREWDRIVER HAVING AN INSULATING HANDLE
Cesare Uboldi, Milan, Italy, assignor to Cesare Uboldi & Figlie S.p.A., Milan, Italy
Filed Nov. 9, 1971, Ser. No. 197,198
Claims priority, application Italy May 31, 1971
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—82

229,476
SHARPENING ROD
Robert N. Farquharson, Bradford, Pa., assignor to W. R. Case & Sons Cutlery Co., Bradford, Pa.
Filed Mar. 15, 1971, Ser. No. 124,653
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—93

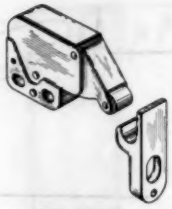
229,477
PLANE
Ronald David Carter, Leamington Spa, England, assignor to Stanley Works (Great Britain) Limited, Woodside, Sheffield, England
Filed Oct. 6, 1971, Ser. No. 187,238
Claims priority, application Great Britain June 23, 1970
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—101



229,478
ESCUTCHEON
Raymond U. H. Tegner, Rockford, Ill., assignor to Amerock Corporation, Rockford, Ill.
Filed June 1, 1971, Ser. No. 149,121
Term of patent 14 years
Int. Cl. D8—*09*
U.S. Cl. D8—179



229,479
SPRING LATCH
Giancarlo Borsani, Via A. Volta 112, 21047 Saronno, Italy
Filed July 19, 1972, Ser. No. 273,303
Claims priority, application Italy Jan. 19, 1972
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—203



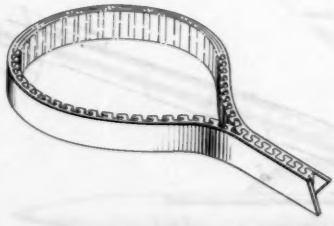
229,480
ADJUSTABLE MOORING BRACKET
Donald Brushaber, Livingston Township, N.J., assignor to Monarch Tool and Manufacturing Co., Fairfield, N.J.
Filed Aug. 13, 1971, Ser. No. 171,785
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—232

229,481
SCREW
Thomas P. O'Donnell, New York, N.Y. (220 Highland Blvd., Brooklyn, N.Y. 11207)
Original design application Aug. 16, 1968, Ser. No. 13,167, now Patent No. 225,970, dated Jan. 16, 1973. Divided and this application Aug. 6, 1970, Ser. No. 24,343
Term of patent 14 years
Int. Cl. D8—*08*
U.S. Cl. D8—267

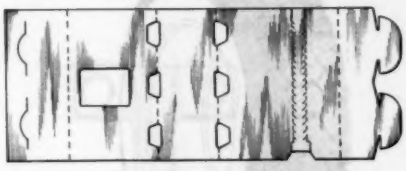
229,482
BOTTLE
Paul Suhard, Paris, France, assignor to Union de Brasseries, Paris, France
Filed Feb. 3, 1972, Ser. No. 223,395
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—147

229,483
CONTAINER FOR LIQUIDS
Gary L. Cutler, East Lansing, Mich., assignor to Cutler Plastics Corporation, Lansing, Mich.
Filed Apr. 14, 1972, Ser. No. 244,354
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—175

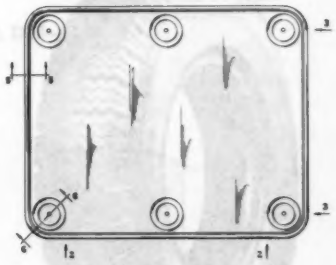
229,484
CORRUGATED STRAP FASTENER
Dwight C. Brown, 5712 N. 20th St., Arlington, Va. 22205
Filed Aug. 16, 1972, Ser. No. 281,004
Term of patent 14 years
Int. Cl. D9—*06*
U.S. Cl. D9—252



229,485
CONTAINER BLANK
Steven H. Petersen, Holland, Mich., assignor to Steketee-Van Huis, Holland, Mich.
Filed Nov. 26, 1971, Ser. No. 202,715
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—245

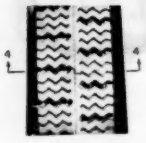


229,486
SUPPORT TRAY
Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.
Filed Jan. 7, 1972, Ser. No. 216,332
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—53

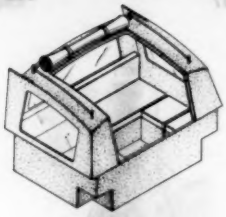


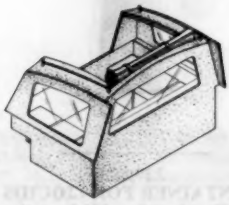
229,487
TIRE
Harold D. Fetty, Birmingham, Mich., assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Dec. 3, 1971, Ser. No. 204,792
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

229,488
TIRE
Gilbert Joseph Hoke, Kenmore, N.Y., assignor to Dunlop Tire and Rubber Corporation, Buffalo, N.Y.
Filed July 20, 1971, Ser. No. 164,486
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D12—151

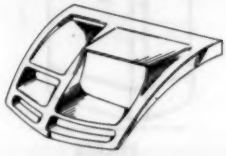


229,489
AUXILIARY CAB FOR A PICKUP TRUCK
Frank Hopkins, Jr., 4770 Fee Road, Bridgeton, Mo. 63044
Filed Feb. 24, 1972, Ser. No. 229,248
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—156

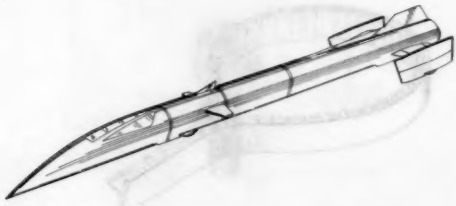




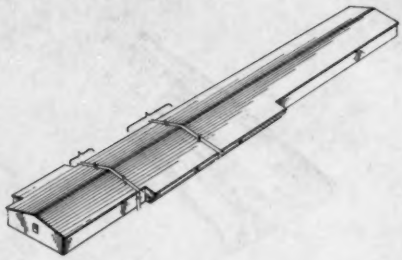
229,490
SNOWMOBILE ENGINE COWLING
Thomas Scott, Valcourt, Quebec, Canada, assignor to Bombardier Limited, Valcourt, Quebec, Canada
Filed May 10, 1972, Ser. No. 252,162
Claims priority, application Canada Apr. 5, 1972
Term of patent 14 years
Int. Cl. D12—*14*
U.S. Cl. D12—173



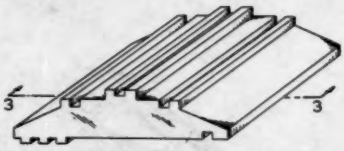
229,491
RACING VEHICLE
Craig N. Breedlove, 2412 Amsler St., Torrance, Calif. 91305
Filed Jan. 7, 1972, Ser. No. 216,340
Term of patent 14 years
Int. Cl. D12—*08*
U.S. Cl. D12—85



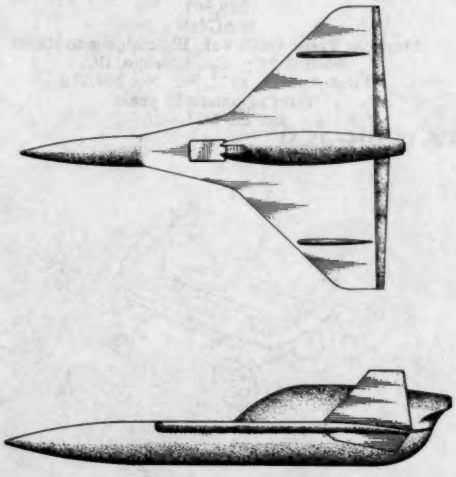
229,492
HI-RISE POULTRY BUILDING
George E. France, Rte. 2, Box 60, Oswego, Ill. 60543
Filed May 8, 1972, Ser. No. 251,602
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D13—1 R



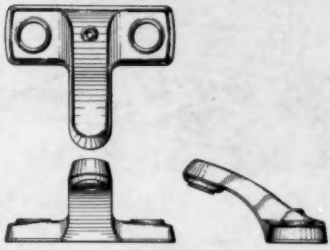
229,493
FRAMING SECTION
Reginald Ernest Feakins, Sea Ridge, Frank's Bay, Southampton, Bermuda
Filed Aug. 16, 1971, Ser. No. 172,356
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D13—6



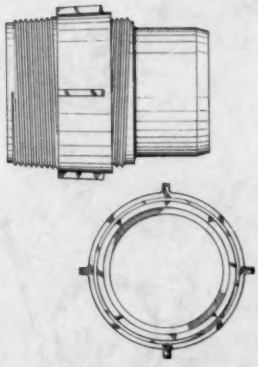
229,494
JET POWERED REMOTELY PILOTED VEHICLE
Leroy I. Sather, 2532 14th W., Seattle, Wash. 98119
Filed Aug. 25, 1971, Ser. No. 175,029
Term of patent 3½ years
Int. Cl. D22—*03*
U.S. Cl. D22—11



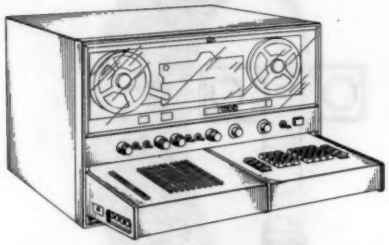
229,495
LAVATORY FITTING
Harper Landell, Fort Washington, Pa., assignor to Speakman Company, Wilmington, Del.
Filed June 2, 1972, Ser. No. 259,359
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—32



229,496
TRAILER WASTE OUTLET COUPLING WITH REVERSELY THREADED MEMBERS
Claude E. Hand, 1402 3rd St., La Grande, Oreg. 97850
Filed July 28, 1971, Ser. No. 167,092
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—43

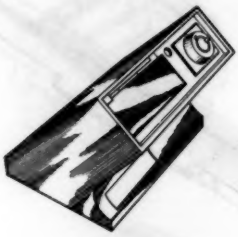


229,497
PROGRAMMABLE TESTER FOR TESTING DIGITAL AND ANALOG CIRCUIT BOARDS AND LOGIC CIRCUITS
John O. Pierce, County of Ventura, Calif., assignor to Litton Systems, Inc., Beverly Hills, Calif.
Filed July 12, 1971, Ser. No. 161,412
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D26—1 Q



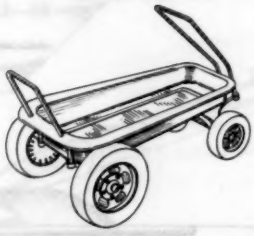
229,498
TELEVISION ANTENNA
Harvey R. Brandt and Nicholas Werner, Somerville, N.J., assignors to Gavin Electronics Division, Antennacraft Company
Filed Nov. 15, 1972, Ser. No. 306,799
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 F

229,499
BATTERY CHARGER OR SIMILAR ARTICLE
Donald K. Krumin and Richard J. Toth, Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 13, 1971, Ser. No. 188,631
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B



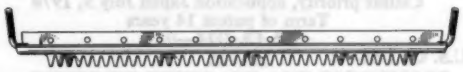
229,500
BATTERY CHARGER OR SIMILAR ARTICLE
Donald K. Krumin and Richard J. Toth, Fort Lauderdale, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Filed Oct. 13, 1971, Ser. No. 188,632
Term of patent 14 years
Int. Cl. D13—*02*
U.S. Cl. D26—15 B

229,501
WAGON
Mario A. Pasin, Oakbrook, Ill., assignor to Radio Steel & Mfg. Co., Chicago, Ill.
Filed Apr. 14, 1972, Ser. No. 244,320
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

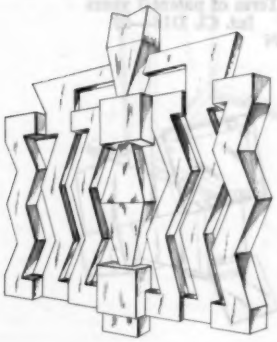


229,502
DRIVING PAD RISER FOR DISC FLOOR SURFACING MACHINE
James E. Thielen, New Brighton, Minn. (2501 Hudson Road, St. Paul, Minn. 55101)
Filed Mar. 1, 1971, Ser. No. 120,001
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D37—1

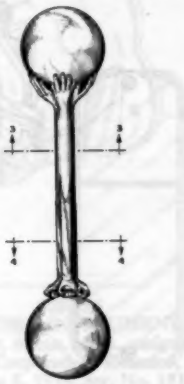
229,503
COMB FOR MOWERS AND THE LIKE
Dale A. Klemenhagen, 5216 Shoreview Ave. S. 55417; Merton F. Snyder, 3325 W. 55th St. 55410; and William C. Lindquist, 5302 30th Ave. S. 55417, all of Minneapolis, Minn.
Filed May 20, 1971, Ser. No. 145,601
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D40—1 R



229,504
TALISMAN
Hari S. Van Hoefen, 803 S. Price Road, Ladue, Mo. 63124
Filed Nov. 24, 1972, Ser. No. 309,073
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—15

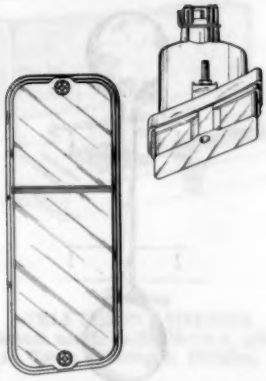


229,505
JEWELRY FINDING
James J. Ryan, 9080 Wesleyan Road, Philadelphia, Pa. 19136
Filed Oct. 12, 1972, Ser. No. 297,166
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D45—1 R

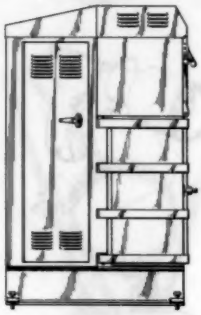


229,506
LAMP OR THE LIKE
Eric W. Chadwick, Saratoga, Calif., assignor to TC Products, Palo Alto, Calif.
Filed Nov. 19, 1969, Ser. No. 20,186
Term of patent 14 years
Int. Cl. D26—*02*
U.S. Cl. D48—20 E

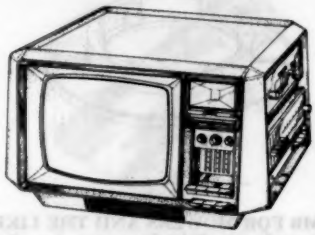
229,507
SIDE LIGHT FOR MOTOR CARS
Gianpaolo Boano, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy
Filed Aug. 9, 1971, Ser. No. 170,423
Claims priority, application Italy Feb. 19, 1971
Term of patent 7 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



229,508
REFUSE BALER
Jay R. Guhl, San Leandro, Calif., assignor of a fractional part interest to W. Dean Park, San Leandro, Calif.
Filed Aug. 6, 1971, Ser. No. 169,882
Term of patent 14 years
Int. Cl. D15—*99*
U.S. Cl. D55—1 B

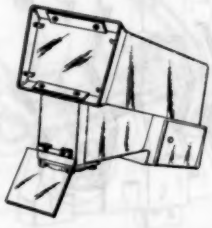


229,509
COMBINED RADIO RECEIVER, TAPE PLAYER, CLOCK AND TELEVISION RECEIVER
Kumi Yanagisawa, Fumiharu Ohta, Susumu Ezawa, and Masaharu Katayama, Saigiyou, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 6, 1972, Ser. No. 241,885
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

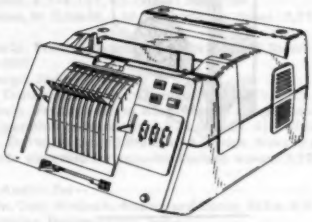


229,510
TELEVISION RECEIVER
Masaharu Katayama and Noriyuki Arai, Saijo, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 30, 1970, Ser. No. 26,708
Claims priority, application Japan July 9, 1970
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4

229,511
MACROSCOPE PROJECTION UNIT
Kenneth Eldred Parker, 6121 Belen St., Long Beach, Calif. 90815
Filed Oct. 14, 1971, Ser. No. 189,490
Term of patent 7 years
Int. Cl. D16—*02*
U.S. Cl. D61—1 N

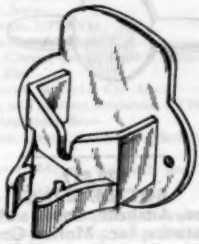


229,512
PRINTING MACHINE
Alan G. R. Ashton, Oxted, and Edward J. Cordell, Chelmsford, England, assignors to English Numbering Machines Limited, London, England
Filed May 4, 1972, Ser. No. 250,465
Claims priority, application Great Britain Dec. 8, 1971
Term of patent 14 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 B

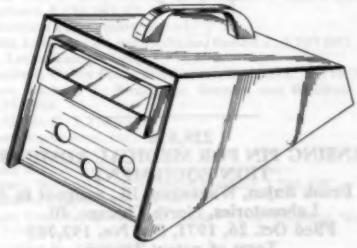


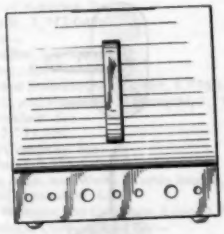
229,513
COMBINED KEYBOARD AND ELECTRONIC DATA PRINTER
Harold William Bermender, Jr., Hamden, Conn., assignor to Mite Corporation, New Haven, Conn.
Filed July 1, 1971, Ser. No. 159,092
Term of patent 7 years
Int. Cl. D18—*02*
U.S. Cl. D64—11 R

229,514
STETHOSCOPE WALL MOUNTED BRACKET
Ben Einhorn, 4858 Topeka Drive, Tarzana, Calif. 91356
Filed July 28, 1971, Ser. No. 167,070
Term of patent 3½ years
Int. Cl. D24—*99*; D14—*03*
U.S. Cl. D83—1 F



229,515
LABORATORY INSTRUMENT CASE
John P. Salsgiver, Acton, Mass., assignor to United Technical Corporation, Concord, Mass.
Filed June 8, 1971, Ser. No. 151,168
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D83—1 F



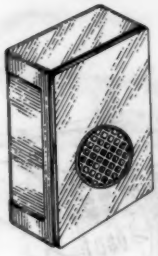


229,516
SAFETY COTTON SWAB
Ronald J. Scheurer, Portland, Oreg., assignor of a fractional part interest to Paul J. Willoughby, Portland, Oreg.
Filed Jan. 14, 1972, Ser. No. 218,044
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—1 J

229,517
BOTTLE SLING
John C. Wilson, Anaheim, Calif., assignor to Baxter Laboratories, Inc., Morton Grove, Ill.
Filed May 22, 1972, Ser. No. 255,932
Term of patent 14 years
Int. Cl. D24—*04*
U.S. Cl. D83—8 R

229,518
DISPENSING PIN FOR MEDICAL ADMINISTRATION EQUIPMENT
Albert Frank Bujan, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.
Filed Oct. 26, 1971, Ser. No. 192,703
Term of patent 7 years
Int. Cl. D24—*04*
U.S. Cl. D83—12 A

229,519
CONTAINER FOR A MESSAGE TRANSMITTER AND CIGARETTES
June Wood, Scottsdale, Ariz., assignor to Aero Electronics Development Co., Inc., Tempe, Ariz.
Filed June 21, 1971, Ser. No. 155,385
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D85—2 B



229,520
PIPE
John J. Lamberti, New York, N.Y. (% Hotel Breslin, Broadway at 29th St., New York, N.Y. 10001)
Filed June 8, 1972, Ser. No. 244,323
Term of patent 14 years
Int. Cl. D27—*02*
U.S. Cl. D85—8 A

229,521
LOCK CHAMBER TENT FOR AIR RAID SHELTERS
Launo Laakkonen, Helsinki, Finland, assignor to Temet Oy, Helsinki, Finland
Filed May 30, 1972, Ser. No. 258,210
Claims priority, application Finland Dec. 13, 1971
Term of patent 14 years
Int. Cl. D21—*04*
U.S. Cl. D88—3 B

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TO WHOM

PATENTS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1973

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Dix, Michael P.; and La Costa, Nicholas J., 3,776,136.

AB Hagglund & Soner: *See—*
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Abe, Katsuo, to Hitachi, Ltd. Cathode ray tubes. 3,777,057, Cl. 178-7.800.

Abe, Kinichi. Process for manufacture of rigid foams. 3,776,746, Cl. 106-75.000.

Abe, Shinogu: *See—*
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Abendschein, Frederic H., to Borg-Warner Corporation. Oil separator for refrigeration compressor. 3,776,668, Cl. 418-97.000.

Abraham, David, to United States of America, Navy. Electronic interation guide structure for acoustic surface waves. 3,777,274, Cl. 330-5.500.

Abrioux, Andre: *See—*
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ACF Industries, Incorporated: *See—*
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Adams, Anthony E.; Yearsley, Gerald A.; Simmons, Marion I.; and Yager, Billy P., to Texas Instruments, Incorporated. Automatic semiconductor bonding machine. 3,776,447, Cl. 228-3.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. Thiadiazine fungicides and miticides. 3,777,025, Cl. 424-246.000.

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Adler, Laszlo; and Whaley, Hubert L., to United States of America, Atomic Energy Commission. Ultrasonic flaw determination by spectral analysis. 3,776,026, Cl. 73-67.700.

Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, to Atomenergikommissionen. Dispersion-strengthened zirconium products. 3,775,823, Cl. 29-182.500.

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Ahlgren, Nils Harald; and Jahr, Odd, to Uddcmann Byggteknik AB. Gripping device. 3,776,586, Cl. 294-102.00r.

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Aiuppa, Francesco. Rake attachment for power sweeper. 3,775,952, Cl. 56-16.400.

Akaishi, Takayuki: *See—*
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Alderton, Howard Kenneth, to Cam Gears Limited. Braking systems. 3,776,607, Cl. 303-22.00r.

Alesson, Thomas; and Dennis, Theodore B., to Datron Systems, Inc. Aerodynamic condensate discharge trap and system. 3,776,254, Cl. 137-183.000.

Alexeeva, Inna Vladimirovna: *See—*
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Allen Bradley Company: *See—*
Callan, John E., 3,777,253.

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Allen, Ernest E., to Fisher Controls Company, Inc. Valve including noise reducing means. 3,776,278, Cl. 137-625.380.

Alley, Lee Joe, to Borg-Warner Corporation. Pressure transfer unit with bellows. 3,776,267, Cl. 137-494.000.

Allied Chemical Corporation: *See—*
Gould, Lawrence P.; and Hoffman, Robert J., 3,777,007.
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Anders, Edward O.; and Nichols, Lloyd G., to Global Marine Inc. Air cushion vehicle with retractable skirt assembly. 3,776,360, Cl. 180-127.000.

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Anderson, Lester F.; Fink, William C.; and Colville, William T., to Sylvania Electric Products, Inc. Photographic flashlamp unit. 3,776,686, Cl. 431-93.000.

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Andrich, Wolfgang: *See—*
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Anson, James H.; and O'Neal, Donald E., to Dickey-John Corporation. Grain analysis computer. 3,776,642, Cl. 356-188.000.

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Atadan, Erdem Munir, to Du Pont de Nemours, E. I., and Company. Electrolytic recovery of metal values from ore concentrates. 3,776,826, Cl. 204-107.000.

Atchisson, Maxwell G. Weapon conversion bolt assembly device. 3,776,095, Cl. 89-128.000.

Atkins, Henry M. Message accentuation device. 3,775,883, Cl. 40-106.250.

Atkinson, Wallace B., to Long Manufacturing Co., Inc. Combination lock construction. 3,776,006, Cl. 70-74.000.

Atomenergikommissionen: *See—*
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Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, to Sumitomo Chemical Company, Limited. 5-Phenylbenzomorphan derivatives and salts thereof. 3,776,914, Cl. 260-293.540.

Atwater, Wayne G., to Triax Company, The. Automatic warehousing system. 3,776,399, Cl. 214-16.40a.

Aubert, Jean. Movable gate system for a hydraulic dam. 3,775,983, Cl. 61-26.000.

Aubin, Guy; Abrioux, Andre; and Leroy, Jules, to L'Oreal. Apparatus for scanning chromatograms and the like. 3,777,163, Cl. 250-491.000.

Audivox, Inc.: *See—*
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Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, 3,776,063.

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Aus der Au, Hans-Rudolf: *See—*
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Austin, Forrest L., to Selectivend, Inc., mesne. Article vending mechanism. 3,776,417, Cl. 221-67.000.

Automated Building Components New Zealand Limited: *See—*
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Awano, Koichi: *See—*
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Bader, Erich; Koert, Hubert; and Brod, Gerd, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Cold hardening polymerizable composition. 3,776,871, Cl. 260-28.50d.
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Baker, John R.; and Williams, Edward G., to Xerox Corporation. Method for manufacturing a tetrafluoroethylene polymer-coated roll. 3,776,760, Cl. 117-72.000.
Baker, Kenneth D., to Engelhard Minerals & Chemicals Corporation. Gold plating electrolyte. 3,776,821, Cl. 204-43.00g.
Baker, Kenneth D., to Engelhard Minerals & Chemicals Corporation. Gold plating electrolyte. 3,776,822, Cl. 204-46.000.
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Banc, James. Motorcycle towing device. 3,776,572, Cl. 280-292.000.
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Barnes, Anthony Michael Preston, to Recording Designs Limited. Rotary drive systems. 3,777,246, Cl. 318-696.000.
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Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, to Kalle Aktiengesellschaft. Light-sensitive copying composition containing a light insensitive polymer and a light sensitive heterocyclic compound. 3,776,735, Cl. 96-115.00r.
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, to Heraeus-Schott Querzschmelze GmbH. Quartz glass elements. 3,776,809, Cl. 161-164.000.
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Beck, Leonard R. Simplified valve assembly. 3,776,510, Cl. 251-333.000.

Beck, Maurice Sidney; Musgrave, Gerald; and Wormald, Colin Norman. Cross correlator. 3,777,133, Cl. 235-181.000.
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Bell, Oliver A., Jr., to Colt Industries Operating Corporation. Electrical discharge machine ram cycle control system. 3,777,104, Cl. 219-69.00g.
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Bennett, Walter Scott, Jr., to Burroughs Corporation. Method and apparatus for obtaining the reciprocal of a number and the quotient of two numbers. 3,777,132, Cl. 235-164.000.
Bennetts, John F. Fishing lure. 3,775,892, Cl. 43-42.140.
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Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., to Cutters Machine Company, Inc. Electrically controlled cloth spreading machine. 3,776,542, Cl. 270-31.000.
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Bergeron, Julien. Winch for snowmobiles. 3,776,515, Cl. 254-166.000.
Berglund, Harold A.; and Thomas, David F., to Waterous Company. Ice cream pump. 3,776,667, Cl. 417-454.000.
Bergstrom, Sune; and Jovall, Jan. Dihydro-PGE 1. 3,776,938, Cl. 260-468.00d.
Bergstrom, Sune; and Jovall, Jan. Dihydro-PGF1α. 3,776,939, Cl. 260-468.00d.
Bernath, John, to Du-Kote Corporation. Dry lubrication. 3,776,762, Cl. 117-93.1go.
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Bonvicini, Gene F. Sprayer attachment for leaf blower. 3,776,459, Cl. 239-77.000.

Bookout, Floyd V., to Rock-Ola Manufacturing Corporation. Selection system for vending machine. 3,776,418, Cl. 221-125.000.

Boor, John, Jr., to Shell Oil Company. Cyclic ether polymerization process. 3,776,862, Cl. 260-2.00a.

Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, to Enterprises International, Inc. Log sorter. 3,776,378, Cl. 209-73.000.

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Borsboom, Albertus C. H., to Shell Oil Company. Process and apparatus for the automatic control of a variable. 3,777,122, Cl. 235-150.100.

Boscaino, Lorenzo. Auxiliary tread for traction tire. 3,776,292, Cl. 152-225.000.

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Bossert, Friedrich; and Vater, Wulf, to Bayer Aktiengesellschaft. Sulphur-containing 1,4-dihydropyridine derivatives for cornary vessel dilating. 3,777,030, Cl. 424-266.000.

Bott, John A. Spare tire hoist. 3,776,511, Cl. 254-1.000.

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Boutros-Attia, Radamis; La France, Conrad; and Nixon, Kenneth Edwin, to Bell Canada-Northern Electric Research Limited. Linkage arrangement in pivoting armature transducer. 3,777,078, Cl. 179-114.000.

Bowen, Mack D., to Tech-Air Corporation. Apparatus and method for determining the temperature of a flowing gas. 3,776,039, Cl. 73-341.000.

Bowman, Brian, to British Steel Corporation. Arc furnace electrodes. 3,777,042, Cl. 13-18.000.

Bowman, Raymond D., to Cavalier Corporation. Control apparatus for dual price vending machine. 3,776,339, Cl. 194-10.000.

BP Chemical International, Limited: *See—*
Failey, Harry; and Yeomans, Bertram, 3,776,951.

Bradford, Nevin Dornan: *See—*
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, 3,776,843.

Bradley, Gordon Frank: *See—*
McKay, Robert Bruce; and Bradley, Gordon Frank, 3,776,749.

Brady, Douglas Mac Pherson, to Bell Telephone Laboratories, Incorporated. Binary modulator for coherent phase-shift keyed signal generation. 3,777,269, Cl. 325-163.000.

Brady, Edward R.: *See—*
Talmo, Robert Eugene; and Brady, Edward R., 3,775,839.

Brauss, Albert. Overspeed and positioning device for a shaft. 3,776,368, Cl. 182-19.000.

Brazzel, Ronald D., to Howe-Baker Engineers Inc. Absorption control. 3,775,946, Cl. 55-58.000.

Breitschwerdt, Werner, to Daimler-Benz Aktiengesellschaft. Instrument panel for vehicles. 3,776,359, Cl. 180-90.000.

Brent, Burton David. Safety guard for dermatome instrument. 3,776,236, Cl. 128-305.000.

Brent, Burton David. Portable stand with magnetic bar surgical instrument holder for use on an operating cart or table. 3,776,387, Cl. 211-60.00t.

Brescia, Riccardo; and Montanari, Lucio, to Olivetti, Ing., C., & C., S.p.A. Thermographic printing arrangement. 3,777,116, Cl. 219-216.000.

Breslow, Jeffrey D.: *See—*
Glass, Marvin I.; and Breslow, Jeffrey D., 3,776,548.

Bridgehouse, Scott, to Lift-All Company, Inc. Synthetic fiber sling construction. 3,776,585, Cl. 294-74.000.

Bright, James A., to General Motors Corporation. Method and apparatus for making clear ice. 3,775,992, Cl. 62-73.000.

Bristol-Myers Company: *See—*
Essery, John Michael; and Chency, Lee Cannon, 3,776,907.

British Iron and Steel Research Association, The: *See—*
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British Steel Corporation: *See—*
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Britton, Donald H.: *See—*
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.

Brod, Gerd: *See—*
Bader, Erich; Koert, Hubert; and Brod, Gerd, 3,776,871.

Brooks, Maurice E.: *See—*
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.

Bross, Charles Frederick, to Pennwalt Corporation. Article packaging machine. 3,775,941, Cl. 53-246.000.

Browder, Lewis B., to Bell & Howell Company. Sequential picture apparatus with continuous film feed. 3,776,622, Cl. 352-119.000.

Browder, Lewis B., to Bell & Howell Company. Rapid rewind sound motion camera or projector. 3,776,623, Cl. 352-124.000.

Brown & Root, Inc.: *See—*
Rochelle, William R.; and Smith, Leif H., 3,775,987.

Brown Boveri & Cie AG: *See—*
Houpert, Bernd; and Reich, Andreas, 3,776,777.

Brown Boveri & Company Limited: *See—*
Croes, Nicolaus, 3,776,663.

Brown, Cicero C. Rotating drive assembly. 3,776,320, Cl. 173-163.000.

Brown, D. S., Company, The: *See—*
Brown, Delmont D., 3,776,654.

Brown, Delmont D., to Brown, D. S., Company, The. Expansion joint and bridge joint seals. 3,776,654, Cl. 404-65.000.

Brown, Lemuel G.: *See—*
Brown, Russell L.; and Brown, Lemuel G., 3,775,926.

Brown, Paul A., to Metpath, Inc. Cervical scraper. 3,776,219, Cl. 128-2.00b.

Brown, Richard E.; Cavanagh, Paul; and Shavel, John, Jr., to Warner-Lambert Company. Tetraloneoxy acetic acids and esters thereof. 3,776,944, Cl. 260-473.00f.

Brown, Russell L.: *See—*
Brown, Russell L.; and Brown, Lemuel G. (said Brown, Lemuel G., assor. to said), 3,775,926.

Brown, Russell L.; and Brown, Lemuel G., said Brown, Lemuel G., assor. to said Brown, Russell L. Shock absorbing chair rail assembly. 3,775,926, Cl. 52-717.000.

Browne, David W.: *See—*
Watkins, Ernest R., Jr.; and Browne, David W., 3,776,990.

Bruestle, Andrew W. Automatic loader for cartons. 3,776,324, Cl. 177-116.000.

Bruker-Physik AG: *See—*
Haas, Jorg, 3,776,057.

Brumm, Karl; and Lamprecht, Rudolf, to General Motors Corporation. Headlamp cleaner arrangements. 3,775,803, Cl. 15-250.290.

Brundage, Clinton F.: *See—*
Anastasio, Frank J.; Brundage, Clinton F.; and Strakosch, Clarence P., 3,776,404.

Brunnett, Carl J.; and Ioannou, Basil N., to Picker Corporation. Automatic limit switch system for a scintillation device and method of operation. 3,777,145, Cl. 250-303.000.

Brunnett, Carl J.; and Ioannou, Basil N., to Picker Corporation. Information density system for scintillation device and method of operation. 3,777,146, Cl. 250-369.000.

Bruno, Juan F.; and Rietras, Richard E. Patient turning apparatus. 3,775,781, Cl. 5-61.000.

Bruschke, Joost M. M.; and Minor, Ronald E., to Eskimo Pie Corporation. Apparatus for producing confection bars. 3,776,671, Cl. 425-62.000.

Brutanza Engineering, Inc.: *See—*
Duclo, Marley J.; and Baker, Michael E., 3,776,354.

Bryan, Carl E., to Grocers Baking Company. Lifting platform. 3,776,402, Cl. 214-75.00t.

Bryant, Emerson C.: *See—*
Mallory, Edwin E.; and Bryant, Emerson C., 3,776,802.

Bryant, Jack A.; and Thomson, Elihu Craig, to Electronics Corporation of America. Sensing apparatus. 3,777,165, Cl. 250-555.000.

Bryant, Spurgeon Q.; and Keith, Samuel S. Service reminder apparatus. 3,776,177, Cl. 116-133.000.

Bryce-Smith, Derek; and Blues, Ernes Thomson. Copper-containing compounds. 3,776,931, Cl. 260-438.100.

BTR Industries, Limited: *See—*
Cameron, James Brisbane; and Walton-Knight, Bernard Piet, 3,776,996.

Buck, Raymond Herbert; and Barlow, Harry Campbell, to United Kingdom Atomic Energy Authority. Metallising pastes. 3,776,769, Cl. 117-212.000.

Buckbee-Mears Company: *See—*
Johnson, E. Curtis; and Hillis, Benjamin F., 3,776,820.

Budd, Allan L.; and Wilkins, Paul E., to Monitor Labs Inc. Calibration system for gas analyzers. 3,776,023, Cl. 73-1.00r.

Budzinski, Roger R., to Park-Ohio Industries, Inc. Induction heating device for ring gears. 3,777,097, Cl. 219-10.590.

Buehler, Arthur; Schuetz, Hans Ulrich; Maeusezahl, Dieter; Harris, Melvin; and Guth, Christian, to Ciba Limited. Process for improving the crease resistance and the abrasion resistance of a textile material. 3,776,767, Cl. 117-138.400.

Buehner, Hans-Friedrich, to Siemens Aktiengesellschaft. Rectifier bridge assembly. 3,777,193, Cl. 310-68.00d.

Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,776,602, Cl. 303-6.00c.

Bueler, Richard C., to Wagner Electric Corporation. Control valve. 3,776,603, Cl. 303-6.00c.

Buhler, Rato: *See—*

Kloots, Jacobus; and Buhler, Rato, 3,776,614.

Builder, Carl H.; and Sessler, Carl W., to Marquardt Corporation, The. Liquid air engine. 3,775,977, Cl. 60-260.000.

Bumb, Frank C., Jr. Tape guide and magnetic head-pressure pad spacer. 3,777,070, Cl. 179-100.20z.

Bunker Ramo Corporation: *See—*
De Jongh, Rudi Theodoor; and Stickdorn, Helmut Oskar, 3,776,330.
Parks, Howard L., 3,775,844.

Bures, Ladislav: *See—*
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Burget, Bohumir: *See—*
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Burke, John R.: *See—*
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Burlbert, Lawrence. Attachment type rabbit feeder. 3,776,190, Cl. 119-18.000.

Burne, Frederick A.: *See—*
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.

Burners, Inc.: *See—*
Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., 3,776,689.

Burnett & Rolfe, Limited: *See—*
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Burroughs Corporation: *See—*
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Luo, Zung-Shyung, 3,777,226.
White, Howard P., 3,776,545.

Burt, Harold S.; and Carvalho, Vasco O., to Conveyor Systems, Inc. Apparatus for depalletizing articles and stacking empty pallets. 3,776,396, Cl. 214-8.50a.

Burton, John, Machine Corporation: *See—*
Rice, Harold B., 3,775,829.

Burtscher, Joachim; Frohmader, Karl Peter; Prost, Alfred; and Voss, Peter, to Siemens Aktiengesleceschaft. Thyristor with auxiliary emitter with triggers first. 3,777,229, Cl. 317-235.00r.

Bushick, Ronald D.; and Hirschler, Alfred E., to Sun Oil Company. Catalytic conversion of polycyclic aromatic hydrocarbons in the presence of hydrogen. 3,776,968, Cl. 260-668.00f.

Buss Ltd.: *See—*
Sutter, Fritz; and Ronner, Fritz, 3,776,529.

Butscher, Franz; and Bader, Werner, to Motoren- und Turbinen-Union Friedrichshafen GmbH. Electronic speed regulator for internal combustion engines. 3,777,174, Cl. 290-40.000.

Buzogany, Alexander S., to Roller Bearing Company of America. Corrugated elastic shim and shaft and hub. 3,776,653, Cl. 403-372.000.

Bytheway, Charles W.: *See—*
Anderson, Brent F.; Bytheway, Charles W.; and Olson, Don L., 3,777,153.

Bzostak, Henryk, to Union Special Machine Company. Flat stitch forming and cover thread laying mechanisms for sewing machines. 3,776,157, Cl. 112-162.000.

Cachat, John F., to Park Ohio Industries, Inc. Method of producing a ring gear and flywheel assembly. 3,775,831, Cl. 29-447.000.

Cahen, Raymond M.: *See—*
Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, 3,776,965.

Calberg, Willis G., to Eastman Kodak Company. Film discriminating and winding apparatus. 3,776,438, Cl. 225-93.000.

Calbiochem: *See—*
Drell, William; and Gueffroy, Donald E., 3,776,903.

California Computer Products, Inc.: *See—*
Parks, Robert G.; and Jimerson, Bruce D., 3,776,113.

Callan, John E., to Allen Bradley Company. Lower power loss voltage supply circuit. 3,777,253, Cl. 323-22.00t.

Cam Gears Limited: *See—*
Alderton, Howard Kenneth, 3,776,607.

Camacho, Daniel Gamez. Paper cutter for cutting specially coded stationery forms. 3,776,085, Cl. 83-449.000.

Cameron, James Brisbane; and Walton-Knight, Bernard Piet, to BTR Industries, Limited. Methods of providing end fittings of hoses. 3,776,996, Cl. 264-242.000.

Camille Bauer Messinstruments Aktiengesellschaft: *See—*
Geisselmann, Heribert, 3,777,257.

Camon Inc.: *See—*
Stewart, John Kenneth, 3,776,153.

Campbell, John M., to Carrier Corporation. Probe mounting structure. 3,776,027, Cl. 73-70.000.

Campbell, Robert L., Jr., to Automated Manufacturing Systems, Inc. Apparatus for molding hollow plastic articles. 3,776,052, Cl. 74-230.17a.

Camps, Javier Sanglas. Wheel hub assembly. 3,776,597, Cl. 301-6.00v.

Canadian Patents and Development Limited: *See—*
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, 3,776,601.

Canon Kabushiki Kaisha: *See—*
Mashimo, Yukio, 3,777,212.

Cantarano, Marcus. Electrophotographic method of imagewise particle transfer employing alternating modulated field. 3,776,722, Cl. 96-1.00r.

Cantor, Abraham; and Winicov, Murray W., to West Laboratories, Inc. Disinfectant composition. 3,777,022, Cl. 424-150.000.

Capablanca, Fernando A.; and Whitney, Douglas E. Circular playing surface having coded indicia. 3,776,554, Cl. 273-131.0ab.

Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, to Canadian Patents and Development Limited. Method and apparatus for conveying particulate material upwardly in a gas stream. 3,776,601, Cl. 302-64.000.

Cappel, Aldo: *See—*
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, 3,776,856.

Carbide Form Grinding, Inc.: *See—*
Pereman, Morris, 3,776,078.

Cardi, Paul. Fail-safe device for thermostatic valves. 3,776,457, Cl. 236-34.500.

Caris, Costa: *See—*
Kamborian, Jacob S.; and Caris, Costa, 3,775,797.

Carlson, Arthur B., to Conco Inc. Product-carrying basket. 3,776,410, Cl. 220-19.000.

Carlson, Duane E. Container crusher. 3,776,129, Cl. 100-98.00r.

Carlson, Paul A., to Wagner Electric Corporation. Signal-sequence control circuit. 3,777,180, Cl. 307-216.000.

Carlstedt, Paul A.: *See—*
Erickson, Arlen J.; and Carlstedt, Paul A., 3,776,546.

Carman, Kenneth K., to Koppers Company, Inc. Gear type coupling. 3,775,997, Cl. 64-9.000.

Carmel, Edwin L.; and Schirmer, Olaf W., to Pullman Incorporated. Trailer landing gear arrangement. 3,776,569, Cl. 280-106.00t.

Carnes, James D.; Young, Bill M.; and Totty, Kenneth D., to Halliburton Company. Method of controlling loose sands and the like. 3,776,311, Cl. 166-295.000.

Carney, William M. Water ski stowing device. 3,776,437, Cl. 224-42.45r.

Carr, Norman L.; and Ko, Daniel Y. C., to Gulf Research & Development Company. Process for preparing a monoalkyl aromatic. 3,776,971, Cl. 260-671.00p.

Carrier Corporation: *See—*
Campbell, John M., 3,776,027.
Neill, Donald E., 3,777,240.

Cartee, Thomas E.: *See—*
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.

Carvalho, Vasco O.: *See—*
Burt, Harold S.; and Carvalho, Vasco O., 3,776,396.

Carver, William M., Jr., to Sears, Roebuck and Co. Zipper. 3,775,812, Cl. 24-205.11r.

Casas-Robert, Ramon, to Mefina S.A. Presser foot for a sewing machine. 3,776,160, Cl. 112-235.000.

Casavant, Roger M.; Larson, Wesley S.; and Panicci, Richard L., to Chen, Allen S., mesne. Shoe covering apparatus. 3,775,793, Cl. 12-1.00r.

Casco Products Corporation: *See—*
Welk, Horace B., Jr., 3,776,043.

Case Western Reserve University: *See—*
Miraldi, Floro D., 3,777,148.

Casey, James T.; and Badia, Frank A., to International Nickel Company Inc., The. Highly reflective aluminum flake. 3,776,473, Cl. 241-15.000.

Cashdollar, Robert E., Sr. Degassing of slag coated melt. 3,776,534, Cl. 266-34.00v.

Casio Computer Co., Ltd.: *See—*
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Cassella Farbewerke Mainkur Aktiengesellschaft: *See—*
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Castonguay, Roger A.: *See—*
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Caterpillar Tractor Company: *See—*
Boggs, Roger L., 3,776,291.
Grawey, Charles E., 3,776,792.

Cauffiel, Ford B. Tapered pole construction and manufacture of same. 3,775,835, Cl. 29-477.300.

Cavalier Corporation: *See—*
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Cavanagh, Paul: *See—*
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Cawthorn, Trevor Lewis, to Cooper Roller Bearings Company Limited. Shaft seals. 3,776,559, Cl. 277-56.000.

Cecil, James B.; and Davis, Walter R., to Motorola, Inc. Constant current regulating circuit. 3,777,251, Cl. 323-4.000.

Celanese Corporation: *See—*
Goetchfus, Ronald O.; and Collins, Michael John, 3,777,127.
Juelke, Charles V.; and Trapasso, Louis E., 3,776,887.
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Celto, John E.: *See—*
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Central Quality Industries, Inc.: *See—*
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Centro Sperimental Metallurgico S.p.A.: *See—*

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Century, Bernard A.; and Linsay, Michael, to Allied Steel & Tractor Products, Incorporated. Safety clutch. 3,775,998, Cl. 64-30.00d.

Cerbai, Guido; and Turbanti, Luigi. Heterocyclic amine esters of 2-phenyl or 2-propyl-4-pentynoic acid. 3,776,908, Cl. 260-247.20b.

Certain-Teed Products Corporation: *See—*
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Ceskoslovenska akademie ved: *See—*
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Chadha, Rajendra Nath, to Stauffer Chemical Company, mesne. Method of curing organic siloxane polymers and copolymers. 3,776,977, Cl. 260-825.000.

Chambers, Bruce B.; and Radabaugh, Gary L., to Textron, Inc. Explosion venting wall. 3,775,915, Cl. 52-1.000.

Chambers, William A.: *See—*
Taylor, James R. A.; and Chambers, William A., 3,777,214.

Chandler, William Bruce; and Foster, George Hails, Jr., to AMP Incorporated. Modular electrical junction and interconnection means with supporting means for terminal blocks. 3,777,223, Cl. 317-118.000.

Chang, Wen H., to International Business Machines Corporation. Charge transfer logic device. 3,777,186, Cl. 307-304.000.

Chant, Peter R., to Shell Oil Company. Apparatus for mineral-finned foam production. 3,776,702, Cl. 23-284.000.

Chapman, James Ronald: *See—*
Benson, Robert W.; Chapman, James Ronald; Reed, Robert G.; and Smith, Hoyt L., 3,776,542.

Chapman, John L., to Bourns, Inc. Process and apparatus for removing undesired windings from wirewound elements. 3,777,109, Cl. 219-85.000.

Charles, James; and Akens, Robert L., to J.P.C., Inc. Energy absorbing highway guardrail. 3,776,520, Cl. 256-13.100.

Chartet, Andre, to Societe Anonyme des Usines Chausson. Process for manufacturing expanded and corrugated heat exchanger cores from metal strip material. 3,776,015, Cl. 72-324.000.

Chase-Shawmut Company, The: *See—*
Knapp, Edward J., Jr., 3,777,297.

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Chekotilo, Leonty Vasilievich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

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Chen, Allen S., mesne: *See—*
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Chen, Ying-Ho; and Lunsford, Carl Dalton, to Robins, A. H., Company. 2-(p-Phenylbenzyl) oxazolines in treating inflammation. 3,777,031, Cl. 424-272.000.

Cheney, Lee Cannon: *See—*
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Cheng, Bao-Ding, to Colgate-Palmolive Company. Detergents containing tetrahydroxysuccinic acid and salts thereof. 3,776,851, Cl. 252-89.000.

Chernetsky, Vladimir Panteleevich; and Alexeeva, Inna Vladimirovna, to Institute Mikrobiologii Im. Akad. DK. Zaboltongo. Method for the preparation of O-substituted-6-azacytinines and 6-azacytidine. 3,776,899, Cl. 260-211.50r.

Chevron Research Company: *See—*
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Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, to Shell Oil Company. Process for the preparation of a crude-oil composition with a depressed pour point. 3,776,247, Cl. 137-13.000.

Christenberry, Thomas T., Jr. Instructional display device. 3,775,867, Cl. 35-17.000.

Christensen, Borge Johannes Ravn; and Jacobsen, Preben Bob. Can with an extensible pouring spout with sealing plug. 3,776,434, Cl. 222-525.000.

Christensen, Jens Jude, 50% to Ruscoe, W. J., Company. Spreadable covering material. 3,776,876, Cl. 260-29.70r.

Christensson, Od W., to Christenssons Maskiner & Patenter Aktiebolag. Foil for closing easily openable packages. 3,776,450, Cl. 229-7.00r.

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Chrobak, Strickland Inc.: *See—*
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Chugai Saiyaku Kabushiki Kaisha: *See—*
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Chunga, Lorenzo, Sr., to Creative Products Lines Inc. Telescopic drinking straw. 3,776,458, Cl. 239-33.000.

Church, Herman S., to Teledyne Mid-American Corporation. Method of molding rubber articles. 3,776,998, Cl. 264-294.000.

Churchheus, Claude W.: *See—*
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Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Ciba Limited: *See—*
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Ciba-Geigy AG: *See—*
Hegar, Gert; and Riat, Henri, 3,776,918.
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Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
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Circuit Equipment Corporation: *See—*
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Cistone, David R., to Kerr Glass Manufacturing Corporation. Closure. 3,776,407, Cl. 215-9.000.

Cities Service Company: *See—*
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Cities Service Oil Company: *See—*
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Citizen Watch Co., Ltd.: *See—*
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Harrington, Gene Norman; and Civardi, Frank Peter, 3,776,790.

Clapham, Thomas J. Magnetic Clock. 3,775,963, Cl. 58-23.00d.

Clark, Burton P.: *See—*
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Clark, Frederick G., to Eastman Machine Company. Knife sharpening mechanism. 3,775,913, Cl. 51-246.000.

Clark, Joseph N.: *See—*
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Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., to Union Camp Corporation. Holder for large box blanks. 3,776,109, Cl. 93-49.00r.

Clark, Robert S. Method for the production of structural bodies. 3,777,001, Cl. 264-337.000.

Clarke, James F.; and Deprez, Thomas A. Apparatus for grinding toothed face members. 3,776,213, Cl. 125-11.00c.

Clarke, Noel. Method and apparatus for measuring the clumping of platelets in whole blood. 3,777,172, Cl. 250-575.000.

Clayton, Ralph S. Doorless passbox for X-ray cassettes and the like. 3,776,110, Cl. 95-1.000.

Clendenen, Roland L., to Shell Oil Company. Alumina-transition metal oxide ceramic products of enhanced ductility. 3,776,744, Cl. 106-73.400.

Cleobury, Donald Jack; and Wilson, Bernard; deceased (by Wilson, Margaret Winifred; administratrix), to General Electric Company Limited, The. Degradation detection in a PCM system. 3,777,268, Cl. 325-38.00r.

Clinton, Henry H. Apparatus for the resistance per unit length of a resistive conductor. 3,777,259, Cl. 324-62.000.

Clouth Gummiwerke AG: *See—*
Gilles, Martin; and Thiel, Anton, 3,776,094.
Gilles, Martin; and Thiel, Anton, 3,776,571.

Coates, John Robert, to Molins Limited. Packet forming. 3,776,105, Cl. 93-12.00r.

Coch, Lester, to Waldes Kohinoor, Inc. System for wet impact plating. 3,776,186, Cl. 118-603.000.

Coffman, John R., to Lewbill Industries, Inc. Combination heating and humidifying system. 3,776,214, Cl. 126-113.000.

Cohen, Arthur Elson. Musical instrument, similar to the according and the like, for easily producing rapid harmonic sequences. 3,776,089, Cl. 84-376.000.

Cole, John M.: *See—*
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Collins, Richard A.; and Martin, John F., to USM Corporation. Shoe inseaming machine with upper pre-tensioning means. 3,775,795, Cl. 12-13.200.
Colt Industries Operating Corporation: *See—*
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Bell, Oliver A., Jr., 3,777,104.
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Comando, Edward N. Bed stirrup for pelvic examinations. 3,776,540, Cl. 264-328.000.
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Conco Inc.: *See—*
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Condon, John J. Dental handpiece attachment. 3,775,849, Cl. 32-59.000.
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Conley, John E. Automatic feeder. 3,776,194, Cl. 119-52.00b.
Conley, Thomas F.; and Gylland, Ernest F., Jr., to Westinghouse Electric Corporation. Variable capacity multiple compressor refrigeration system. 3,775,995, Cl. 62-196.000.
Conner, William B. Keyboard actuated lighting instrument. 3,777,134, Cl. 240-10.00r.
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Cover, Paul F.; and Kemper, Clyde F., to United Company, The. Simulation evaluation method. 3,776,527, Cl. 259-91.000.
Cox, Donald Clyde, to Bell Telephone Laboratories, Incorporated. Linear amplification with nonlinear devices. 3,777,275, Cl. 330-10.000.
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., to Pullman Incorporated. Railway passenger vehicle step and door construction. 3,776,143, Cl. 105-343.000.
Cragar Industries, Inc.: *See—*
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Cramer, Bernhard; and Andrich, Wolfgang, to International Standard Electric Corporation. Data input system for an electrical machine. 3,777,155, Cl. 250-229.000.
Cramm, Herman W.; Gorby, Clifford L.; and Leetma, Juri G., to Hughes Aircraft Company. Die cast waveguide low pass filter. 3,777,286, Cl. 333-70.00s.
Craven, James Milton, to Du Pont de Nemours, E. I., and Company. Process for finishing surfaces. 3,776,752, Cl. 117-10.000.
Crawford, Richard W.; Rigdon, Lester P.; and Thompson, Richard J., to United States of America, Atomic Energy Commission. Method and reagent for determining nitrogen oxides. 3,776,697, Cl. 23-232.00r.
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Creme, Nicholas and Cosma: *See—*
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Croisier, Alain; Esteban, Daniel J.; Levilion, Marc E.; and Riso, Vladimir, to International Business Machines Corporation. Digital filter for PCM encoded signals. 3,777,130, Cl. 235-152.000.
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Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, to Knapsack Aktiengesellschaft. Process for the manufacture of suspension polyvinyl chloride of porous structure and high apparent density. 3,776,894, Cl. 260-12.80w.
Dagley, Edgar Edward, to Automated Building Components New Zealand Limited. Timber connectors and/or machines for making the same. 3,775,789, Cl. 10-52.000.
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D'Amato, Nicholas J. Non-clogging closure cap. 3,776,424, Cl. 222-94.000.

Damgaard-Iversen, Jorgen; and Kruse, Flemming, to Aktieselskabet Niro Atomizer. Method for operating a rotating kiln plant for the production of cement as well as a plant for carrying out the method. 3,776,688, Cl. 432-14.000.

D'Amico, John Joseph, to Monsanto Company. 1,1-Di(aminoalkylthio)-2,2-dicyanoethylenes. 3,776,891, Cl. 260-79.50b.

D'Amico, John Joseph, to Monsanto Company. 2-(N-2-cyanoethyldithiocarbamylmethylene) benzimidazoles. 3,776,920, Cl. 260-309.200.

Damm, David A.; and McKim, Robert G., to Owens-Illinois, Inc. Apparatus and method for monitoring the status of a radio frequency thickness gauge. 3,776,380, Cl. 209-111.500.

Dandliker, Rene; and Mottier, Francois, to Aktiengesellschaft Brown, Boveri & Cie. Process and apparatus for investigating the coherence of light radiation. 3,776,636, Cl. 356-106.000.

Daniel, Edmond, to Societe Creusot-Loire. Apparatus for facilitating the passage of rigid connectors coupling flexible elements around a rotary member. 3,776,516, Cl. 254-190.00r.

Daniels, Alma U.; and Iler, Ralph K., to Du Pont de Nemours, E. I., and Company. Aluminum oxide based articles of jewelry. 3,776,706, Cl. 29-182.500.

Daniels, Calvin Lee: *See—*
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Dannals, Leland E., to Uniroyal, Inc. Alkyl-sulfoxide and alkyl-sulfone terminated oligomers as emulsifiers in emulsion polymerizations. 3,776,874, Cl. 260-29.6ta.

D'Assignies, Jean. Hydraulic speed checker and cooling means. 3,776,332, Cl. 188-290.000.

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Daughtry, Arthur C., to Esso Production Research Company. Method and apparatus for making remote pipeline connections. 3,775,986, Cl. 61-72.300.

Dautzenberg, Frits M.; and Alkema, Henk J., to Shell Oil Company. Motor fuel production process. 3,776,837, Cl. 208-65.000.

Dautzenberg, Frits M.; Kouwenhoven, Herman W.; and Naber, Jaap E., to Shell Oil Company. Sulfur oxide-acceptors having high initial activity with good chemical and physical stability and process for their preparation. 3,776,854, Cl. 252-196.000.

Davenport, William K. Spray mix applicator. 3,776,468, Cl. 239-310.000.

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Davies, Jenkin Eric; and Van Dijk, Jan, to U.S. Philips Corporation. Compounds having pharmacological properties. 3,777,034, Cl. 424-285.000.

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Davin, Donald R.; and Beckley, Gary H., to Blaw Knox Construction Equipment Inc. Paving machine. 3,776,326, Cl. 180-9.200.

Davis, John Howard; and Hendy, Brian Norman, to Imperial Chemical Industries Limited. Method of producing reinforced thermoplastic materials. 3,776,751, Cl. 117-4.000.

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De Jongh, Rudi Theodoor; and Stickdorn, Helmut Oskar, to Bunker Ramo Corporation. Braking device for adjustment apparatus. 3,776,330, Cl. 188-67.000.

De Lucia, John R. Combination flashlight and propellant discharge device. 3,776,429, Cl. 222-162.000.

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Debus, Henri Robert; Van Tongelen, Marcel; Cahen, Raymond M.; and Daniels, Calvin Lee, to Labofina S.A. Selective conversion of diethylcyclohexanes to gem-structured tetramethylcyclohexanes. 3,776,965, Cl. 260-666.00r.

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Dobner, Richard G.; and Hebert, Donald G., to Singer Company, The. Printer paper guide which compensates for the thickness of document pack. 3,776,341, Cl. 197-127.00r.

Dock, Everett H.; and Heilhecker, Joe R., to Esso Production Research Company. Tool assembly. 3,776,472, Cl. 239-591.000.

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Atadan, Erdem Munir, 3,776,826.
Craven, James Milton, 3,776,752.
Daniels, Alma U.; and Iler, Ralph K., 3,776,706.
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Dubuit, Louis Gilbert. Automatic bottle handling machines. 3,776,346, Cl. 198-33.0ad.

Duclo, Marley J.; and Baker, Michael E., to Brutanza Engineering, Inc. Snowmobile engine and torque converter mount. 3,776,354, Cl. 180-64.00r.

Dudek, Maria B., to Fried Krupp Huttenwerke AG. Steel composition capable of being cold rolled. 3,776,720, Cl. 75-126.00m.

Duffield, Peter L., to Mead Corporation, The. Catcher for a jet drop recorder. 3,777,307, Cl. 346-75.000.

Duffy, Patrick J.: *See—*
Werra, Bruno R.; and Duffy, Patrick J., 3,776,042.

Dumas, Christ J. Multiplier assembly. 3,777,249, Cl. 321-8.000.

Dunkley, James L.; and Smith, Bruce E., to Motorola, Inc. Method of producing high speed transistors and resistors simultaneously. 3,776,786, Cl. 148-175.000.

Dunkley, Willis Robert, Jr.: *See—*
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Dunn, Cornelius C.: *See—*
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Dunning, Charles E.; and Day, Winteron U., to Kimberly-Clark Corporation. Air formed adhesive bonded webs and method for forming such webs. 3,776,807, Cl. 161-124.000.

Dupont, Michel; Lacroix, Henri; and Lagardes, Jacques, to Automobiles Peugeot and Regie National des Usines Renault. Gas-removing box for a liquid circuit. 3,775,947, Cl. 55-159.000.

Dvoracek, Louis M., to Union Oil Company of California. Fouling rate reduction in hydrocarbon streams. 3,776,835, Cl. 208-48.0aa.

Dvorsky, Daniel A. Ski boot binding plate protector and walking aid. 3,775,875, Cl. 36-72.00a.

Dyck, Gerhard J., to Dyckes Sprinkler Co., Ltd. Plastic hose, riser and clamping system. 3,776,463, Cl. 239-204.000.

Dyckes Sprinkler Co., Ltd.: *See—*
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Dyczynski, Karol T. Elevating mechanism. 3,776,328, Cl. 187-17.000.

Dzsida, Laszlo: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.

E-Z Up Industries, Inc.: *See—*
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Earps, Hugh B.: *See—*
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Eastern Company, The: *See—*
Perron, Robert R.; and Pastan, Harvey L., 3,777,263.

Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., to Eastman Kodak Company. Electrographic formation of dye images. 3,776,757, Cl. 117-37.0le.

Eastman Kodak Company: *See—*
Calberg, Willis G., 3,776,438.
Eastman, Donald R.; Chechak, Jonas J.; and Merrill, Stewart H., 3,776,757.
Edwards, Evan A., 3,776,114.
Frost, David A.; and Schieven, Stanley R., 3,776,732.
Gade, John N., 3,776,405.
Miller, Donald N., 3,776,774.
Reitter, George M., 3,776,483.
Williams, Jack L. R.; Laakso, Thomas M.; and Borden, Douglas G., 3,776,737.

Eastman Machine Company: *See—*
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Ebauches S.A.: *See—*
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Eberhart, Russell C., to Allied Farm Equipment, Inc. Electronic control for crop thinning. 3,776,316, Cl. 172-6.000.

Ebner, George A.; and Ebner, Marjorie J. Apparatus and propeller for entraining fluid in liquids. 3,776,531, Cl. 261-87.000.

Ebner, Marjorie J.: *See—*
Ebner, George A.; and Ebner, Marjorie J., 3,776,531.

Eckbreth, Alan C.; and Mensing, Arthur E., to United Aircraft Corporation. Deposition of power in a moving gas stream by electric discharge means. 3,777,279, Cl. 331-94.500.

Eckert, Charles F.; and Pinkowski, Norman J., to Uniroyal, Inc. Bonding EPDM rubber to general purpose butadiene polymer rubber. 3,776,811, Cl. 161-253.000.

Ecodyne Corporation, mesne: *See—*
Yohn, Melvin G.; and Simon, Joseph P., 3,777,110.

Eden, Jamal S., to Goodrich, B. F., Company, The. Preparation of unsaturated aldehydes and acids. 3,776,952, Cl. 260-533.00n.

Edwards, Evan A., to Eastman Kodak Company. Photographic apparatus. 3,776,114, Cl. 95-31.0fm.

Edwards, William M., to McCall Printing Company, The. Reversible tip-on machine. 3,776,543, Cl. 270-53.000.

Eggen, Svein. Device for securing a film for dental X-ray to a right-angled film holder and aiming rod by means of a ray-permeable bite block with film support and an antagonist bite plate. 3,777,141, Cl. 250-521.000.

Eggers, Joachim: *See—*
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Eggleton, Cecil Howard, Jr.; and Henry, William Franklin, to Dresser Industries, Inc. Overload regulator for lever hoists. 3,776,514, Cl. 254-167.000.

Ehle, George E.; and Peraro, James S., to Armstrong Cork Company. Partition adaptor and ventilating air divider. 3,776,123, Cl. 98-40.00d.

Ehringer, Hermann O., to Westinghouse Electric Corporation. Method of making greatly elongated tungsten or molybdenum members. 3,777,111, Cl. 219-105.000.

Einstein, Bernard Caesar, to Litton Systems, Inc. Light amplifier tube having an ion and low energy electron trapping means. 3,777,201, Cl. 313-65.00r.

Eisai Co., Ltd.: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.

Eisentraut, Anna M., to Nuclear-Medical Laboratories, Inc. Test for thyroid hormone. 3,776,698, Cl. 23-230.00b.

Eising, John P., to Smith, A. O., Corporation. Direct fired water heater thermal compensating dip tube. 3,776,456, Cl. 236-93.000.

Eislers, Visvaldis, to Comalco Limited. Railway wagon. 3,776,144, Cl. 105-406.00r.

Elco, Richard A.: *See—*
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Electro-Mechanical Instrument Div., VLN Corporation: *See—*
Void, Lester R., 3,777,265.

Electronics Corporation of America: *See—*
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Elemelt Limited: *See—*
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Lutovsky, Josef; and Prasil, Vladimir, 3,776,479.
Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, 3,775,956.

Elkins, Carlos D. Transparent slide for the examination of liquid specimens. 3,777,283, Cl. 331-94.500.

Elliott, Stanley B. Visual-type hygrometer. 3,776,038, Cl. 73-335.000.

Ellman, Julius; and Lerner, George. Liquid eliminating doll with valve means actuated by external magnetic device. 3,775,901, Cl. 46-239.000.

Elphiac: *See—*
Trine, Joseph, 3,777,100.

Elpower Corporation: *See—*
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Elsner, Bertram F.; and Elsner, Frank, Jr., to Elsner Engineering. Roll banding machine. 3,775,939, Cl. 53-212.000.

Elsner Engineering: *See—*
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

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Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.
Wright, James A., 3,776,684.

Emerson, L. Frank, to GTE Sylvania Incorporated. Frequency to voltage converter employing Hall effect cell with signal hysteresis and normalizing. 3,776,606, Cl. 303-21.0cf.

Emery Industries, Inc.: *See—*
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., 3,776,928.

Emery, William B., to Korry Manufacturing Company. Alternately released and detained reciprocable actuating mechanism. 3,776,049, Cl. 74-110.000.

Emge, Gene F., to Kochring Company. Self clearing container part conveyor system. 3,775,862, Cl. 34-105.000.

Emhart Corporation: *See—*
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Endo, Tsunehiko. Process for producing sputtered films. 3,776,830, Cl. 204-192.000.

Energetics Science Inc.: *See—*
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Engel, Paul: *See—*
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English Electric Company, Limited, The: *See—*
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Enomoto, Koji; Akaishi, Takayuki; and Ishimaru, Wataru, to Nissan Motor Company, Limited. Automatic power transmission control system. 3,776,048, Cl. 74-866.000.

Enskat, Albert G.: *See—*
Watson, Donald W.; and Enskat, Albert G., 3,776,544.

Enslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, to Preussag Aktiengesellschaft- Metall. Disposal of plastics. 3,776,147, Cl. 410-7.00a.

Enterprises International, Inc.: *See—*
Booth, Bruce F.; Veilleux, Pierre; and Hall, Richard William, 3,776,378.

Environment/One Corporation: *See—*
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Envirotech Corporation: *See—*
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Epple, Donald G., to Nalco Chemical Company. Polymeric flexographic ink. 3,776,758, Cl. 117-38.000.

Epstein, Joseph William; and Goldman, Leon, to American Cyanamid Corporation. Indole carboxaldehydes. 3,776,922, Cl. 260-326.50b.

Erb, Wick D. Walking beam conveyor and eccentric construction therefor. 3,776,351, Cl. 198-219.000.

Erbert, Virgil, to Rolamite, Incorporated. Meter movements. 3,777,264, Cl. 324-146.000.

Erich, Malcolm: *See—*
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Erickson, Arlen J.; and Carlstedt, Paul A., to CX Processing Laboratories, Inc. Selective article director multiposition gate. 3,776,546, Cl. 271-64.000.

Erickson, John W., to Kobe, Inc. Pitot tube for pitot pump. 3,776,658, Cl. 415-88.000.

Erickson Tool Company: *See—*
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Ernst, Otto: *See—*
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Eskimo Pie Corporation: *See—*
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Espenschied, Helmut, to Bosch, Robert, G.m.b.H. Gear shifting assembly for change-speed transmission. 3,776,056, Cl. 74-364.000.

Essery, John Michael; and Cheney, Lee Cannon, to Bristol-Myers Company. 7-[D-(α-Amino-α-phenyl-, 2-thienyl- and 3-thienylacetamino)]-3-(1,2,3-thiadiazol-4- or 5-yl)-carbonylthiomethyl-3-cephem-4-carboxylic acids. 3,776,907, Cl. 260-243.00c.

Essex International, Inc.: *See—*
Hartz, Marvin E.; and Witek, Roman J., Jr., 3,776,495.

Esso Production Research Company: *See—*
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Evans, Paul R.; and Graham, Donald H., to AWT Systems, Inc. Fluidized bed system for solid wastes. 3,776,150, Cl. 110-8.00r.

Ewing, Alvin L. Remotely controlled mining machine. 3,776,592, Cl. 299-1.000.

Excelermatic, Inc.: *See—*
Kraus, Charles E., 3,776,051.

Failey, Harry; and Yeomans, Bertram, to BP Chemical International, Limited. Production of tetramethyl suberic acid. 3,776,951, Cl. 260-533.00a.

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Falk, David O.: *See—*
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Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., to Fall, Herbert S. Circulating ball bearing slide. 3,776,608, Cl. 308-3.800.

Fall, Martin K.: *See—*
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Fall, Maxwell S.: *See—*
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Faulkner, Richard Dale: *See—*
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Fay, James Eugene. Apparatus for continuous production of spiral pipe. 3,776,448, Cl. 228-5.000.
Fazioli, William A., to Norton Company. Splash-proof vibratory apparatus. 3,776,526, Cl. 259-72.000.
Federal Paper Board Company, Inc.: *See—*
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Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich. High-speed pressing machine. 3,776,020, Cl. 72-445.000.
Fedotov, Mikhail Nikitovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.
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Fellner, Hugo R.: *See—*
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Fergason, James L.; and Goldberg, Newton N., to Westinghouse Electric Corporation. Iodine containing cholesteric compounds. 3,776,927, Cl. 260-397.200.
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Groh, Louis; and Jones, Harry Joseph, 3,776,013.
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., to Westinghouse Electric Corporation. Recurrent arc heating process. 3,777,112, Cl. 219-121.00p.
Ficholz, Arthur H.; and McCambridge, James E., to Central Quality Industries, Inc. Vacuum cleaner. 3,775,951, Cl. 55-417.000.
Fichter, Barry S., to American Standard, Inc. Spray nozzle. 3,776,460, Cl. 239-101.000.
Field, Crosby. Ice making machine and method. 3,775,991, Cl. 62-72.000.
Field John H., to Sigma Instruments, Inc. Low-inertia synchronous inductor motor. 3,777,196, Cl. 310-156.000.
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Fischer, Hans; and Hellendrung, Herbert, to Gutchoffnungshutte Sterkrade Aktiengesellschaft. Method for forming transverse welded seams between vertically oriented workpieces having V-shaped groove and bevel. 3,777,105, Cl. 219-73.000.
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Fisher, H. L., Mfg. Co., Inc.: *See—*
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Fisher, Jere D. Ski boot holder. 3,775,794, Cl. 12-1.00r.
Fismer, William L. Apparatus for lifting flasks, molds and patterns. 3,776,300, Cl. 164-403.000.
Fisons Pharmaceuticals Limited: *See—*
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Fitzmaurice, Colin; and Lee, Thomas Brian, to Fisons Pharmaceuticals Limited. Bis-chromonyl pharmaceutical composition and methods. 3,777,033, Cl. 424-283.000.
Fjermestad, Arnold R.; Lea, Albert; and Nellis, William M., to National Cooperatives, Inc. Automatic milking apparatus. 3,776,189, Cl. 119-14.280.
Flagge, Andrew, to Thor Power Tool Company. Dual safety control for a power tool. 3,775,911, Cl. 51-170.00t.
Flasch, John Robert: *See—*
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Flatland, Lloyd P. Dental handpiece. 3,775,851, Cl. 32-26.000.
Fleissner, Heinz, to Vepa AG. Apparatus for the continuous treatment of thick, voluminous textile materials. 3,776,004, Cl. 68-5.00e.
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Foderaro, Anthony J., to Picker Corporation. X-ray apparatus having a telescopic columnar support. 3,776,500, Cl. 248-333.000.
Foldes, Stephen, to General Electric Company. Method of preparing copper for use in the arcing electrodes of a vacuum circuit interrupter. 3,776,719, Cl. 75-76.000.
Foley, Charles F.; and McCarthy, Charles D. Holder for transferring fishing line to reel. 3,776,485, Cl. 242-106.000.
Ford, Lionel Houston; Davidge, Roger William; and Evans, Anthony Glyn, to United Kingdom Atomic Energy Authority. Production of nuclear fuel particles coated with silicon carbide. 3,776,759, Cl. 117-69.000.
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Foust, Michael L.: *See—*
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Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., to ACF Industries, Incorporated. Valve structure having fluid pressure actuated sealing members. 3,776,506, Cl. 251-172.000.
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Frank, Wilhelm, to Frank, Wilh., GmbH. Closure arrangement for a window or door opening employing a slidable and tiltable panel. 3,775,905, Cl. 49-153.000.
Franklin Electric Co., Inc.: *See—*
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Franklin, William E.; and Rowland, Stanley P., to United States of America, Agriculture. Recurable crosslinked cellulosic fabrics from methylol reagents and polycarboxylic acids. 3,776,692, Cl. 8-116.300.
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Frazier, Larry C., to National-Standard Company. Method of incorporating tire beads into a tire. 3,776,793, Cl. 156-132.000.
Freck, James A.: *See—*
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Freeman Supply Company, The: *See—*
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Fremer, William A.: *See—*
Turner, John S.; and Fremer, William A., 3,776,499.
French, Dana, to United States of America, Navy. Multi-axis hand controller. 3,776,058, Cl. 74-471.0xy.
French, Fred W., to Noranda Metal Industries, Inc. Tubing with inner baffle fins and method of producing it. 3,776,018, Cl. 72-367.000.
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Fritsch, Udo H. Enclosure for coiled garden hose. 3,776,262, Cl. 137-355.160.

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Frost, John W.; and Stibbe, Paul H., to TEC Systems, Inc. Web handling apparatus. 3,776,440, Cl. 226-97.000.

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Fujiwara, Yoshiyasu. Air vent. 3,776,255, Cl. 137-202.000.

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Fukumoto, Shigeru, to Kabushiki Kaisha Suncrux Research Office. Time indicating apparatus. 3,775,964, Cl. 58-50.00r.

Fulenwider, John E., to GTE Laboratories Incorporated. Linear motor relay. 3,777,292, Cl. 335-126.000.

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Gadet, Raymond, to Societe Nouvelle de Roulements. Integrated freewheel mechanisms. 3,776,335, Cl. 192-41.000.

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Stanley, Lester N.; and Farris, Russell E., Jr., 3,776,898.
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Galian, John N.; and Karkut, Ernest W., said Karkut assor. to Total Systems Corporation. Calling system utilizing a telephone. 3,777,065, Cl. 179-6.0ta.

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Ganis, Joseph Francis, to E-Z Up Industries, Inc. Basketball backboard support assembly. 3,776,549, Cl. 273-1.50r.

Garan, Incorporated: *See—*
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Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., to Shell Oil Company. Linear monoolefin production. 3,776,974, Cl. 260-683.00d.

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Gerlach, Johannes; and Gock, Eberhard, to Metallgesellschaft Aktiengesellschaft. Method of refining nonferrous sulfide arsenide and antimonide mineral substances. 3,777,005, Cl. 423-27.000.

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Gilbert, Joseph G. Composition and method for the treatment of damaged skin. 3,777,016, Cl. 424-80.000.

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Gill, Victor A., to Nasco Engineering Incorporated. Incinerator toilet. 3,776,152, Cl. 110-9.00r.

Gillemot, George W.; and Thompson, John T. Bonding device and anchorage for shielded cables. 3,777,049, Cl. 174-78.000.

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Gilles, Martin; and Thiel, Anton, to Clouth Gummiwerke AG. Casing for track-laying and wheel-equipped vehicles. 3,776,571, Cl. 280-154.50r.

Gillette, Robert P.; and Kunz, Henry P., to Foster Wheeler Corporation. Pulverizer with fixed-arm spacer assembly. 3,776,478, Cl. 241-103.000.

Gilstrap, James Thomas. Press head insulator. 3,775,880, Cl. 38-66.000.

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Glaser, David W.; and Lovald, Roger A., to General Mills Chemicals, Inc. Water-reducible acid terminated polymeric fat acid polyamide resins useful as flexographic ink binders. 3,776,865, Cl. 260-18.00n.

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Gordon, Norman R.; and Pedersen, Herbert N., to United States of America, Atomic Energy Commission. Method of making a molded piezoelectric transducer assembly. 3,775,816, Cl. 29-25.350.

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Gould, Lawrence P.; and Hoffman, Robert J., to Allied Chemical Corporation. Anti-caking additives for inorganic salts. 3,777,007, Cl. 423-268.000.

Gouy, Jean-Claude, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Transfer device for cigarettes and similar objects. 3,776,343, Cl. 198-20.00c.

Gove, Ernest J., Sr. Backplowing snowplow attachment. 3,775,877, Cl. 37-42.0vl.

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Grassman, Willard F.; and Erich, Malcolm, to Silco, Inc. Mop frame. 3,775,802, Cl. 15-147.00a.

Gratsch, Jack M., to Cutters Exchange, Inc. Sew-off means for automatic sewing machines. 3,776,155, Cl. 112-121.150.

Gratzmuller, Jean Louis. Interrupter device for high voltage direct current. 3,777,178, Cl. 307-136.000.

Grawey, Charles E., to Caterpillar Tractor Company. Belted oval pneumatic tube-tire. 3,776,792, Cl. 156-124.000.

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Grenier, Raymond P.; and Jacobson, Earl B., to Baird-Atomic, Inc. High resolution radioactivity distribution detection system. 3,777,142, Cl. 250-327.000.

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Griggs, Carl L.; and Hansman, George, to National Service Industries, Inc. Clamp-type fabric display means. 3,775,870, Cl. 35-55.000.

Grimes, John Herbert; and Lane, Edward Sydney. Production of metal-containing materials from sols. 3,776,987, Cl. 264-.500.

Grimme, Henry L., Jr., to Raypak, Inc., mesne. Water cleaning treatment. 3,776,842, Cl. 210-23.000.

Groce, Larry A.; and Renner, Darwin S. Fault indicator apparatus for fault location in an electrical power distribution system. 3,777,217, Cl. 317-33.00c.

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Gross, Ronald E., to Cooke Engineering Company. Red cell rinser. 3,776,699, Cl. 23-259.000.

Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, to Borg-Warner-Stieber GmbH. Adjustable mandrel for clamping a work piece. 3,776,562, Cl. 279-2.000.

Grosseau, Albert, to Societe Anonyme Automobiles Citroen. Speed limiters for internal combustion engines with controlled coil ignition. 3,777,088, Cl. 200-80.000.

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Grube, William L., to MacLean-Fogg Lock Nut Co. Method of securing fasteners to sheet material. 3,775,833, Cl. 29-470.100.

Gruber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, to Kalle Aktiengesellschaft. Process for bonding the fibers of a nonwoven textile fabric. 3,776,799, Cl. 156-305.000.

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Gustafsson, Lennart, to Aktiebolaget Partner. Brake-device for power saws. 3,776,331, Cl. 188-166.000.

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Guyer, Raymond H.; and Leebl, Robert G., to United States of America, Atomic Energy Commission. Article removal device for glovebox. 3,776,284, Cl. 141-65.000.

Gwin, Richard B.; Ballis, William L.; Churchheus, Claude W.; and Hutt, Bruce L. Welding torch oscillator. 3,777,101, Cl. 219-60.00a.

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Handy, Harry C. Set-up tool. 3,775,857, Cl. 33-185.00r.

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Haney, Robert L. Formation of well packers. 3,776,561, Cl. 277-116.800.

Hanke, David E., to Kimberly-Clark Corporation. Self-lubricating compound for use in hygienic and medical applications and suppositories made therefrom. 3,776,001, Cl. 128-271.000.

Hankins, Harold Charles Arthur; and Torsun, Imad Shakir, to International Computers, Limited. Dark trace cathode ray tube erase system. 3,777,213, Cl. 315-323.000.

Hansen, Claus M.; and Norgaard, Ejvind N., to Smidth, F. L., & Co. Sandwich diaphragm for mill. 3,776,477, Cl. 241-72.000.

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Harris, Leroy S., to K-G Industries, Inc. Compacting roll structure and method. 3,775,820, Cl. 29-118.000.

Harris, Louis Selig; Pars, Harry George; and Razdan, Raj Kumar, to Sharps Associates. 5,5-Dimethyl-10-hydroxy-8-(3-methyl-2-octyl)-2-(2-propynyl)-1,2,3,4-tetrahydro-5H(1)-benzopyrano (3,4-d)pyridine as an anti-diarrheal agent. 3,777,028, Cl. 424-263.000.

Harris, Melvin: *See—*
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Harris, Paul Anthony, to Lucas, Joseph, (Industries) Limited. Speed limiting systems for internal combustion engines. 3,776,204, Cl. 123-102.000.

Harris, Thomas J., to International Business Machines Corporation. Modular touch sensitive indicating panels with touch and light transmissive overlay cover membrane containing visible printed indicia. 3,777,222, Cl. 317-112.000.

Harrison, Arthur Denwood Richard, to University of Survey, The. Apparatus for applying liquid samples to a surface. 3,776,184, Cl. 118-243.000.

Harrison, John, to Spra-Con Company, The. Article induction system. 3,776,344, Cl. 198-20.000.

Harrison, John M., to North Electronics Corporation. Delay distortion measurement system. 3,777,256, Cl. 324-57.00r.

Harrison, William B.; and Keene, Edwin E., to Grace, W. R., & Co. Mechanism for separating a container closure from a stack of closures. 3,776,421, Cl. 221-251.000.

Hart, Herman. Safety guard and dust and debris collector attachment for a drill. 3,776,647, Cl. 408-241.00g.

Hartz, Marvin E.; and Witek, Roman J., Jr., to Essex International, Inc. Mounting device. 3,776,495, Cl. 248-71.000.

Harvey, Dennis Francis, to Girling Limited. Servo motors. 3,776,610, Cl. 308-3.500.

Harvey, Edward H. Lumber sorter. 3,776,379, Cl. 209-73.000.

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Hill, Marion E.; and Lerom, Michael W., to United States of America, Atomic Energy Commission. Nitrodifluoraminopolyaromatic compounds. 3,776,958, Cl. 260-576.000.
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Howard, Arthur G.; and McHugh, John P. Humidifier means. 3,776,215, Cl. 126-113.000.

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Iowa State University Research Foundation, Inc.: *See—*
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Ito, Kiyoji. Shock absorbing steering shaft assembly. 3,776,062, Cl. 74-492.000.
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Apparatus for collecting centrifigally spun filaments. 3,776,669, Cl. 425-8.000.
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, to Fuji Photo Film Co., Ltd. Developer for photographic negatives used for printing. 3,776,731, Cl. 96-66.400.
Jachim, Frank J. Container for fish lures. 3,775,895, Cl. 43-54.50r.
Jackson, Richard H.; and Warner, Dale J., to Gits Bros. Mfg. Co., Inc. Shaft seal method of manufacturing. 3,775,836, Cl. 29-483.000.
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Janchus, Robert M.: *See—*
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Jency, Peter, to Tourpac AG. Packaging apparatus and method. 3,775,932, Cl. 53-22.00a.
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Jessup, Artie D., to United States of America, National Aeronautics and Space Administration. Lyophilized spore dispenser. 3,776,432, Cl. 222-193.000.
Jessup, Robert L.; and Farley, David L., to Halliburton Company. High pressure rotatable pipe connection. 3,776,578, Cl. 285-94.000.
Jimerson, Bruce D.: *See—*
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Johanson, Donald Lee; and Stutz, Rolf, to Audivox, Inc. Hearing aid having recessed microphone. 3,777,077, Cl. 179-107.00r.
Johnson, Arthur J. Outdoor ground tile. 3,775,918, Cl. 52-169.000.
Johnson, Bruce L., to Elpower Corporation. Celled battery electrolyte containing a polyglycol polymer and a process for locating same within a lead-acid cell. 3,776,779, Cl. 136-157.000.
Johnson, Donald L. Blade assemblies for flacing apparatus. 3,776,288, Cl. 144-235.000.
Johnson, E. Curtis; and Hillis, Benjamin F., to Buckbee-Mears Company. Method of forming miniature electrical conductors. 3,776,820, Cl. 204-15.000.
Johnson, Edward J., to Stanley Works, The. Pruner. 3,775,846, Cl. 30-262.000.
Johnson, Irving S., to Lilly, Eli, and Company. Psoriosis treatment with mycophenolic acid. 3,777,020, Cl. 424-180.000.
Johnson, Kurt Theodore, to Seeburg Corporation of Delaware, The. Credit pulse generating system for vending machines. 3,776,338, Cl. 194-9.00r.
Johnston, James R.; and Moertel, George B., to Textron, Inc. Apparatus for forming slide fastener stops. 3,775,815, Cl. 29-207.5st.
Jones, Cecil E. P. Chord playing attachment for string musical instruments. 3,776,088, Cl. 84-317.000.
Jones, Charles Wright, to Xepex Industries, Inc. Apparatus for filling and sealing cartons for holding liquids. 3,775,943, Cl. 53-282.000.
Jones, Clarence O., Jr., to Niagara Machine & Tool Works. Inertia balancing means for power presses. 3,776,046, Cl. 74-50.000.
Jones, Harry Joseph: *See—*
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Jones, Jerry O.; and Osburn, Michael R., to United States of America, Navy. Shot vortex arming device. 3,776,140, Cl. 102-70.20r.
Jones, Lloyd Leslie Llewellyn. Data supports for numerical data. 3,776,454, Cl. 235-61.12r.
Jones, R. A., & Company, Inc., mesne: *See—*
La Mers, Herbert, 3,776,801.
Jongetjes, Hendrik, to Koninklijke Papierfabricken van Gelder Lonen N.V. Process for making paper containing latex with carboxyl group. 3,776,812, Cl. 162-168.000.
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Bergstrom, Sune; and Jovall, Jan, 3,776,939.
Joyce, Benjamin Norman, Sr. Variable volume rotary vane pump having an integral opposed reciprocating piston internal combustion engine. 3,776,203, Cl. 123-56.00c.
J.P.C., Inc.: *See—*
Charles, James; and Akens, Robert L., 3,776,520.
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Stoffels, Carl A., 3,776,070.
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Julian Engineering Company: *See—*
Julian, John A., 3,776,122.
Julian, John A., to Julian Engineering Company. Atmosphere circulation system. 3,776,122, Cl. 98-33.000.
Junes, Norman E.; and Stanyer, William R. Skyline logging carriage. 3,776,390, Cl. 212-122.000.
Jung, Shee Lup; and Beste, Lawrence Forwood, to De Pont de Nemours, E. I., and Company. Process for the preparation of stretch resistant polypivalolactane fibers. 3,776,997, Cl. 264-290.000.
Jungle, Nils Ake Curt, to Aktiebolaget Gotaverken. Welding machine for connecting tubes to a wall. 3,776,449, Cl. 228-29.000.
Jurd, Leonard; King, Alfred Douglas, Jr.; and Stanley, William L., to United States of America, Agriculture. Cinnamyl phenols useful as antimicrobial agents. 3,777,037, Cl. 424-341.000.
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Just, George E.; and Simonovitch, Chaim (said Simonovitch assor. to said), 3,776,941.

Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Intermediates for producing prostaglandins. 3,776,940, Cl. 260-468.00g.

Just, George E.; and Simonovitch, Chaim, said Simonovitch assor. to said Just, George E. Intermediates for producing prostaglandins. 3,776,941, Cl. 260-468.00g.

K-G Industries, Inc.: *See—*
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Kabas, Guglielmo: *See—*
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Kaiser, Karl: *See—*
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Kalil, James, to Du Pont de Nemours, E. I., and Company. Preparation of tetraisopropyl thioperoxydiphosphate. 3,776,986, Cl. 260-985.000.

Kalish, Jerome Barton, to Chemtoy Corporation. Multiple stream bubble blower. 3,775,898, Cl. 46-7.000.

Kalle Aktiengesellschaft: *See—*
Bauer, Sigrid; Sikora, Helga; and Frass, Hans Werner, 3,776,735.
Gfuber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, 3,776,799.

Kallenbach, Stanely E.: *See—*
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Kalser, Ernst K.; Geiersbach, Allois F.; and Neumann, Manfred E., to Allis-Chalmers Corporation. Filter for replacing notches in electric waves. 3,777,250, Cl. 321-9.00r.

Kamborian, Jacob S.; deceased (by Godley, Lisbeth N.; Becka, Michael M.; and Kamborian, Jacob S., Jr.; executors); and Caris, Costa, said Caris assor. to said Kamborian, Jacob S.; deceased. Method and machine for lasting. 3,775,797, Cl. 12-145.000.

Kamborian, Jacob S.; deceased: *See—*
Kamborian, Jacob S.; and Caris, Costa (said Caris assor. to said), 3,775,797.

Kamborian, Jacob S., Jr.: *See—*
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Kameyama, Iwao: *See—*
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Kamienski, Conrad W.: *See—*
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Kamogawa, Nin-Ichi; Fujii, Haruo; and Uchida, Tohru, to Konishiroku Photo Industry Co., Ltd. Corona discharge device for electrophotography. 3,777,158, Cl. 250-324.000.

Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, to Matsushita Electric Industrial Co., Ltd. Color television signal recording and reproducing system. 3,777,060, Cl. 178-5.4cd.

Kampfer, Richard H., to Conveyor Specialties Company. Fabricated flexible conveyor chain. 3,776,349, Cl. 198-195.000.

Kanegafuchi Boseki Kabushiki Kaisha: *See—*
Ogawa, Yasuhiro; Nooya, Kazuo; Awata, Norio; and Yamakawa, Yukio, 3,775,960.

Kanno, Kyusei, to Asahi Kogaku Kogyo Kabushiki Kaisha. Camera shutter system. 3,776,115, Cl. 95-53.0cb.

Kansai Paint Company Limited: *See—*
Nakayama, Yasuharu, 3,776,866.

Kanter, Jerome J. Magnetic thermocouple device. 3,776,780, Cl. 136-228.000.

Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, to Tatabanyai Szenbanyak. Method for processing of red mud. 3,776,717, Cl. 75-38.000.

Karig, Horace E., to United States of America, Navy. Lox heat sink system for underwater thermal propulsion system. 3,775,976, Cl. 60-39.330.

Karkut, Ernest W.: *See—*
Galian, John N.; and Karkut, Ernest W., 3,777,065.

Karlowitz, Bela. Method for emission control for spark ignition engines. 3,776,212, Cl. 123-191.0sp.

Kashio, Toshio, to Casio Computer Co., Ltd. Nozzle device for ink jet printing equipments. 3,776,461, Cl. 239-125.000.

Kasle Steel Corporation: *See—*
Morrison, James J., 3,776,146.

Katayama, Masayoshi, to Tokico Ltd. Variable displacement type fluid pump or motor. 3,776,102, Cl. 91-483.000.

Kato, Hisatoyo; and Takeda, Hideo, to Fuji Photo Film Co., Ltd. Liquid sensitometry of photographic emulsion. 3,776,696, Cl. 23-230.00r.

Kato, Kazunobu; and Ohkubo, Kinji, to Fuji Photo Film Co., Ltd. Support for an image-receiving material for the silver salt diffusion transfer process. 3,776,761, Cl. 117-76.00p.

Katz, Norman H., to United States of America, Atomic Energy Commission, mesne. Process for massively hydriding zirconium-uranium fuel elements. 3,776,508, Cl. 252-301.10r.

Kawai, Yoshio: *See—*
Ito, Yukihiko; Araki, Tadashi; Kawai, Yoshio; and Kameyama, Iwao, 3,776,669.

Kawamura, Susumu: *See—*
Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, 3,776,764.

Kawasaki, Kauru, to Tenchi Kikai Kabushiki Kaisha. Cream feeder for apparatus for producing confectionery. 3,776,185, Cl. 118-406.000.

Kazlauskas, Gasparas; and Vowell, Kennison L., to Astro-Arc Co. Apparatus for controlling electrode oscillation. 3,777,115, Cl. 219-125.00r.

Kazutaka, Kuwana: *See—*
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Kearney & Trecker Corporation: *See—*
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Kee Lox Manufacturing Company: *See—*
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Keeler Brass Company: *See—*
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Keene, Edwin E.: *See—*
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Keil, Karl-Heinz: *See—*
Wiatrowski, Stefan; Heid, Christian; and Keil, Karl-Heinz, 3,776,690.

Keiot, Jules. Spinning wheel. 3,776,055, Cl. 74-242.150.

Keith, Samuel S.: *See—*
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Kelchner, Roland: *See—*
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Kelley, Donald W.; White, James F., Jr.; Winslow, Ronald B.; and Coppock, Charles L., to Thuron Industries, Inc. Method of producing extruded thermoset polyurethanes. 3,776,877, Cl. 260-31.80m.

Kelley, Louis E., to Rohm & Haas Company. Bonded non-woven fabric. 3,776,810, Cl. 161-170.000.

Kelly, Kenneth K.; and Matthews, Joseph S., to Gulf Research & Development Company. Reaction of ketoximes with carboxylic acid amide-sulfur trioxide complexes. 3,776,901, Cl. 260-239.30a.

Kelton, Robert L. Animated mechanical steer having spring biased head. 3,776,553, Cl. 273-105.200.

Kemeny, George A.: *See—*
Fey, Maurice G.; Wolf, Charles B.; Azinger, Frederick A., Jr.; and Kemeny, George A., 3,777,112.

Kemezys, Vincent A., to Barnes Engineering Company. Locking ball joint. 3,776,649, Cl. 403-90.000.

Kemp, Willard E.: *See—*
Fowler, James M.; Kemp, Willard E.; and Tomlin, Jerry B., 3,776,506.

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Kerr Glass Manufacturing Corporation: *See—*
Cistone, David R., 3,776,407.

Keserin, Ivan, to Metallgesellschaft Aktiengesellschaft. Corona-discharge electrode mounting. 3,775,827, Cl. 29-275.000.

Kessler, Claus, to Siemens Aktiengesellschaft. Metal-clad high-voltage switching system. 3,777,218, Cl. 317-59.000.

Kessler, Milton. Insulated runner system for plastic cap molds. 3,776,676, Cl. 425-250.000.

Keyser, Lewis R., to Price Brothers Company. Pipe assembly. 3,776,576, Cl. 285-27.000.

Keystone Industries, Inc.: *See—*
Hawthorne, Vaughn T., 3,776,391.

Khan, Amir U., to United States of America, Agriculture. Combination threshing and separating machine. 3,776,242, Cl. 130-27.00t.

Khan, Waheed N. Cover element disc dispenser. 3,776,818, Cl. 195-139.000.

Kiefer, Thomas J.; and Nagatani, Masamichi, to Amchem Products, Inc. Polyester and polyamide adhesion improvers. 3,776,782, Cl. 148-6.15z.

Kicley & Mueller, Inc.: *See—*
O'Connor, Joseph, Jr., 3,776,265.
O'Connor, Joseph, Jr., 3,776,279.

Kihara, Hidetoshi; and Tsuzuki, Kanemitsu, to Daiwa Boseki Kabushiki Kaisha and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Rotary spinning chamber for an open-end spinning machine. 3,775,957, Cl. 57-58.890.

Kilby, Jack S. System for disabling incoming telephone calls. 3,777,067, Cl. 179-81.00r.

Kimberly-Clark Corporation: *See—*
Dunning, Charles E.; and Day, Winteron U., 3,776,807.
Hanke, David E., 3,776,001.
Thomas, Gordon D.; and Gresham, James Tyson, 3,776,797.

Kimmel, Ardean. Small diameter irrigation pump. 3,776,664, Cl. 417-243.000.

King, Alfred Douglas, Jr.: *See—*
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Kinsworthy, Donald D.: *See—*
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Kirkham, Edward E., to Kearney & Trecker Corporation. Input data sampling scheme for computer controlled machine tools. 3,777,128, Cl. 235-151.110.

Kirkhof Manufacturing Corporation: *See—*
Medendorp, Roger L., 3,776,374.

Kissell, Ronald E., to Owens-Corning Fiberglas Corporation. Jacketed fibrous duct and method and apparatus for applying the jacket to the duct. 3,776,803, Cl. 156-499.000.

Kitao, Takaya: *See—*
Fujita, Osamu; and Kitao, Takaya, 3,777,288.

Kittleman, Edmund T.; and Zuech, Ernest A., to Phillips Petroleum Company. Olefin conversion using complexes of Mn, Tc, and Re with organoaluminum. 3,776,973, Cl. 260-683.00d.

Kjellqvist, Olof Gunnar, to AB Hagglund & Soner. Hydraulic engine having a flat slide. 3,776,103, Cl. 91-487.000.

Kjoller, John: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process for the production of monoacetin and glycerine. 3,776,948, Cl. 260-491.000.

Kleiman, Jury Lvovich; Morkovin, Nikolai Viktorovich; and Pavlenko, Vladimir Antonovich. Nuclear magnetic resonance spectrometer with jointly functioning external and internal resonance stabilization systems. 3,777,254, Cl. 324-.50r.

Klein, Ira, to United States of America, Navy. Phase lock loop with automatic step by step search sweep followed by linear search sweep. 3,777,276, Cl. 331-4.000.

Kleinschmidt, Johann O.: *See—*
Papajewski, Reinhold; and Kleinschmidt, Johann O., 3,776,161.

Klenk, Ludwig: *See—*
Gruber, Ehrenfried; Klenk, Ludwig; and Hammer, Klaus-Dieter, 3,776,799.

Kliot, Jules. Hand loom. 3,776,280, Cl. 139-33.000.

Klippan GmbH: *See—*
Weman, Per Olof, 3,776,570.

Kloots, Jacobus; and Buhler, Rato, to Applied Fiberoptics and Scientific Specialties, Inc. Microscope with remote image system. 3,776,614, Cl. 350-35.000.

Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, to Maschinenfabrik Fahr AG. Power-takeoff assembly for connecting farm implements to a vehicle. 3,776,327, Cl. 180-14.00b.

Klosowski, Jerome M.: *See—*
Frye, Cecil L.; and Klosowski, Jerome M., 3,776,915.

Knapp, Edward J., Jr., to Chase-Shawmut Company, The. Electric fuse for elevated circuit voltages. 3,777,297, Cl. 337-161.000.

Knapsack Aktiengesellschaft: *See—*
Czekay, Arno; Kramer, Bruno; and Kaiser, Karl, 3,776,894.

Knavish, Leonard A.; and Schornhorst, James R., to PPG Industries, Inc. Apparatus for refining glass. 3,776,710, Cl. 65-134.000.

Knox, Lloyd C., to Halliburton Company. Float collar with differential fill feature. 3,776,250, Cl. 137-71.000.

Knutson, Dale A., to Applied Power Inc. Automatic release and centering device. 3,776,099, Cl. 91-358.00a.

Ko, Daniel Y. C.: *See—*
Carr, Norman L.; and Ko, Daniel Y. C., 3,776,971.

Ko, Daniel Y. C.; and Stahlfeld, Donald L., to Gulf Research & Development Company. Reforming process in two stages at different pressures. 3,776,836, Cl. 208-65.000.

Kobayashi, Daizo: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.

Kobayashi, Kenji: *See—*
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Kobayashi, Norio: *See—*
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Kobayashi, Shigekazu: *See—*
Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, 3,776,994.

Kobayashi, Yugoro, to Ricoh Co., Ltd. Method and apparatus for developing for diazo type copying machines. 3,776,117, Cl. 95-89.00g.

Kobe, Inc.: *See—*
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Kobe Steel, Ltd.: *See—*
Arikawa, Masayasu; Oishi, Minoru; Rokujyo, Masaharu; and Ishihashi, Tatuyuke, 3,777,113.
Nakanishi, Sadayuki, 3,776,505.

Koch Adler AG: *See—*
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Kock, Theodorus Joannes: *See—*
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Koehring Company: *See—*
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Koepp, Hans-Martin: *See—*
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Koert, Hubert: *See—*
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Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, to Matsushita Electric Industrial Co., Ltd. Method for making photoelectric device. 3,777,205, Cl. 313-108.00a.

Kohler, Terry J., to Vollrath Co., The. Wash basin and soap dish combinations. 3,775,779, Cl. 4-166.000.

Kohn, Mitchell I., to Love Controls Corporation. Controller circuit. 3,777,187, Cl. 307-310.000.

Kohrumel, Richard William, to Dow Chemical Company, The. Adapter shim device. 3,776,259, Cl. 137-318.000.

Kokubo, Noriyoshi, to Victor Company of Japan, Limited. Tape cassette adapter having drive means without a flywheel. 3,777,073, Cl. 179-100.20z.

Kokusai Denshin Denwa Kabushiki Kaisha: *See—*
Ogawa, Akira, 3,777,062.

Kolb, Robert H., to Shell Oil Company. Method for measuring fluid flow in units of mass. 3,776,034, Cl. 73-194.00m.

Kolesnikov, Valery Afanasievich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.

Kollerov, Vyacheslav Viktorovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., to International Business Machines Corporation. Editing procedures for dictation and typing systems. 3,777,072, Cl. 179-100.2md.

Komakine, Chukei. Method for inhibiting the formation of malodors from poultry farms. 3,776,188, Cl. 119-1.000.

Konan Camera Research Institute: *See—*
Ikegami, Yoshizo, 3,776,640.

Koninklijke Papierfabrieken van Gelder Lonen N.V.: *See—*
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Konishiroku Photo Industry Co., Ltd.: *See—*
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Kontis, George E.: *See—*
Ashley, Eugene; Jarvis, Francis L.; Clark, Burton P.; Kontis, George E.; and Spoor, Paul A., 3,776,416.

Koolaj-es Gazipari Tervezo Vallalat: *See—*
Ban, Akos; Nagy, Sandor; and Balint, Valer, 3,776,312.

Kopenhaver, Kenneth Oscar, to AMP Incorporated. Apparatus and method for field-repairing high-voltage electrical connector lead assemblies. 3,775,828, Cl. 29-401.000.

Koppers Company, Inc.: *See—*
Carman, Kenneth K., 3,775,997.

Korner, Tassilo: *See—*
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Korry Manufacturing Company: *See—*
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Kosaka, Shinya, to Olympus Optical Co., Ltd. Speed control device for a D. C. motor. 3,777,244, Cl. 318-331.000.

Koshar, Robert J.; and Mitsch, Ronald A., to Minnesota Mining and Manufacturing Company. Preparation of bis(perfluoroalkylsulfonyl) methanes. 3,776,960, Cl. 260-607.00a.

Kouwenhoven, Herman W.: *See—*
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Kraft, Kenneth A., to Mohr, John, & Sons. Method and apparatus for packaging poultry utilizing controllably actuated positive pressure lifting means. 3,775,931, Cl. 53-22.00b.

Krafter Corporation: *See—*
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Krafto Corporation: *See—*
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Kraftwerk Union Aktiengesellschaft: *See—*
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Krage, Richard F.: *See—*
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Krakow, Heinz, to Blohm & Voss A.G. Device for helically deforming a band to form a tube. 3,776,010, Cl. 72-12.000.

Kramer, Bruno: *See—*
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Kramer, Edward W.; and Mitchell, Edward, to Gulf Research & Development Company. Vapor recovery system. 3,776,283, Cl. 141-45.000.
Krampe, Josef. Plier. 3,776,071, Cl. 81-415.000.
Kraus, Charles E., to Excelermatic, Inc. Rotary motion transmitting device. 3,776,051, Cl. 74-208.000.
Kraus, Warner. Large-picture camera. 3,776,120, Cl. 95-82.000.
Krause, Erich, to Universal Maschinenfabrik Dr. Rudolf Schieber KG. Saving motion for control means on knitting machines. 3,776,003, Cl. 66-154.00a.
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Kreisburg, Vladimir Markovich: *See—*
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Kriege, David J.: *See—*
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Krishna, Surinder; and Davis, John R., Jr., to Westinghouse Electric Corporation. Double diffused high voltage, high current NPN transistor. 3,777,227, Cl. 317-235.00r.
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., to Xerox Corporation. Manifold imaging. 3,776,721, Cl. 96-1.00r.
Krolopp, Otto C.: *See—*
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Kroon, Peter J., to General Electric Company. Electric switch with magnetic-assist means to assist switch in closing and remaining closed against high currents. 3,777,291, Cl. 335-16.000.
Krueger, Henry B. Automobile opera window installation apparatus and method. 3,776,591, Cl. 296-146.000.
Krumm, Andrew G.: *See—*
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Kruse, Flemming: *See—*
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Kubo, Kakuzo, to Tokyo Seimitsu Co., Ltd. Automatic sizing device for measuring apparatus. 3,775,910, Cl. 51-165.770.
Kubota, Kunihiro: *See—*
Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, 3,776,947.
Kuehn, Donald E.; and Lyon, John Keith, to TRW Inc. Loop fastener gun assembly. 3,776,444, Cl. 227-130.000.
Kuethe, Arnold M. Control of noise and instabilities in jet engines, compressors, turbines, heat exchangers and the like. 3,776,363, Cl. 181-33.00c.
Kuhlmann-Schaefer, Wilhelm H.; and Dinter, Manfred E., to Preussag Aktiengesellschaft. Apparatus for recovery of magnetizable materials from the sea bottom. 3,776,593, Cl. 299-8.000.
Kuhnl, Leopold K., to Warner-Lambert Company. Adjustable single edge razor with guard and wash positions. 3,775,845, Cl. 30-41.000.
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Kuijpers, Wilhelmus, to U.S. Philips Corporation. Adjusting device for a particle beam. 3,777,211, Cl. 315-31.00r.
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Kully, Herbert: *See—*
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Kumasaka, Isao, to Fuji Photo Film Co., Ltd. Photosensitive aluminum plate of improved storage stability. 3,776,734, Cl. 96-86.00r.
Kunoth, Kenneth Henry. Gas pressure operated warning devices. 3,776,174, Cl. 116-34.00r.
Kunst, Robert J.: *See—*
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Kusakabe, Takesi: *See—*
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Kusenberg, Eugen; Hubler, Ernst; Aus der Au, Hans-Rudolf; and Ernst, Otto, to Ciba-Geigy AG. Method of producing a thick-walled cured plastics moulding. 3,777,000, Cl. 264-327.000.
Kushnarenko, Sergei Grigorievich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.
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Kuzmin, Valery Vyacheslavovich: *See—*
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.
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Labofina S.A.: *See—*
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Lacheij, Gerardos E.; and Van Amerongen, Gerrit J., to Shell Oil Company. Process for the production for aqueous dispersions of modified synthetic conjugated diene polymers. 3,776,872, Cl. 260-29.7at.
Lachenmayer, Wilhelm, to Benteler Werke AG. Method of manufacturing tubular articles. 3,776,993, Cl. 264-159.000.
Lacroix, Henri: *See—*
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Ladeur, Peter, to Shell Oil Company. Hydrocracking process for lube oil over Ni-Mo- and Ni-W on SiO_2-ZrO_2. 3,776,839, Cl. 208-110.000.
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Lahti, Abbott W., to Power Systems Inc. Variable DC motor power source. 3,777,235, Cl. 318-341.000.
Laing, Alfred M., to Magnetics, Inc. Magnetic particle core. 3,777,295, Cl. 335-297.000.
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Lamboley, Gilbert Andre, to Etablissements Hutchinson Compagnie Nationale du Caoutchouc. Anti-pollution barrier. 3,775,982, Cl. 61-1.00f.
Lamprecht, Rudolf: *See—*
Brumm, Karl; and Lamprecht, Rudolf, 3,775,803.
Land, Edwin H., to Polaroid Corporation. Photographic cassette for making and storing transparencies incorporating programmed film strip with opaque reflective segments. 3,776,624, Cl. 352-130.000.
Land, Edwin H., to Polaroid Corporation. Color diffusion transfer photographic products, processes and compositions. 3,776,726, Cl. 96-3.000.
Lando, David Jacob, to Western Electric Company, Incorporated. Method of selectively depositing a metal on a surface of a substrate. 3,776,770, Cl. 117-212.000.
Landor, Walter, Associates, mesne: *See—*
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Landrith, James Edward, to Van Dyk Research Corporation. Xerographic toner concentration measuring apparatus and method. 3,777,173, Cl. 250-575.000.
Lane, Edward Sydney: *See—*
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Lane, Henry G. Capless can detecting and turning apparatus. 3,776,377, Cl. 209-73.000.
Languepin, Carel Fouche: *See—*
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Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Lathouwers, Franciscus Johannes Maria; and De Groot, Jacob, to U.S. Philips Corporation. Method of adjusting the dimensions of sintered ferromagnetic cores. 3,775,841, Cl. 29-605.000.

Lau Incorporated: *See—*
Griffith, Jerry L.; and Kinsworthy, Donald D., 3,776,530.

Lawson, John B., to Lawson-Hemphill, Inc. Yarn handling apparatus. 3,776,480, Cl. 242-47.010.

Lawson-Hemphill, Inc.: *See—*
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Layton, Jack D., to Layton Manufacturing Company. Earth working machine including scrapper blade means. 3,776,318, Cl. 172-777.000.

Layton Manufacturing Company: *See—*
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Lazar, Ferenc: *See—*
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Lazarus, Stokes, to Aeroseal Corporation. Removal of ice by a self-heating mixture. 3,776,775, Cl. 134-42.000.

Lea, Albert: *See—*
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Leak, Vance G.; and Fine, Morris M., to United States of America, Interior. Recovery of cooper and steel from scrap. 3,776,718, Cl. 75-63.000.

Lear Siegler, Inc.: *See—*
Tersch, Richard W., 3,776,011.

Leblond, Christian, to Pont-A-Mousson S.A. Valve having an eccentric butterfly member and sealing element for said valve. 3,776,509, Cl. 251-306.000.

Leblond, Jean R., to Uniroyal Societe Anonyme. Method of tire shaping and vulcanizing. 3,776,999, Cl. 264-315.000.

LeCan, Claude Jan Principe Frederic; and Steinmaier, Walter, to U.S. Philips Corporation. Semiconductor device with isolated circuit elements. 3,777,230, Cl. 317-235.00r.

Lederman, Peter B.: *See—*
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Lee, Alwyne. Fluid control valve. 3,776,271, Cl. 137-595.000.

Lee, Arthur: *See—*
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Lee, Joe Y. Toilet flush tank mechanism. 3,775,778, Cl. 4-67.00a.

Lee, Lap Yen, to United States of America, Atomic Energy Commission. Hodoscope readout system. 3,777,161, Cl. 250-361.000.

Lee, Lester Tsung-Cheng, to Allied Chemical Corporation. Polyamides from 2-(4-aminocyclohexyl)-1,1-dimethylethylamine or 2-(4-aminophenyl)-1,1-dimethylethylamine. 3,776,890, Cl. 260-78.00r.

Lee, Maw-Huei. Telephone silencing apparatus. 3,777,069, Cl. 179-84.00r.

Lee, Raymond, Organization, Inc., The: *See—*
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Lee, Thomas Brian: *See—*
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Leetma, Juri G.: *See—*
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Leittl, Leo C. Germicidal toiletry cabinet for different personal hygiene items. 3,776,694, Cl. 21-102.000.

Lemelson, Jerome H. Container and retaining means. 3,776,372, Cl. 206-7.00h.

Lemelson, Jerome H. Game apparatus. 3,776,552, Cl. 273-130.00r.

Lemin, Alan J.; Steinhards, Arnolds; and Swank, George, to Upjohn Company, The. Herbicidal method and compositions comprising diphenamid and 2,4-D. 3,776,716, Cl. 71-117.000.

Leomand, Gerard C., to Societe Nationale Industrielle Aerospatiale. Pyrolytic carbon nose for hypersonic vehicles. 3,776,139, Cl. 102-105.000.

Leonard, Donald L., to Vermont American Corporation. Thread forming tap. 3,775,792, Cl. 10-152.00t.

Lerner, George: *See—*
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Lerner, Robert Wendell; Hayati, Hossein; and Flasch, John Robert, to Stauffer Chemical Company. Coating composition. 3,776,881, Cl. 260-37.0sb.

Lerom, Michael W.: *See—*
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Leroy, Jules: *See—*
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Lesser, Joseph H.: *See—*
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Leszke, Hans-Hinrich, to Hell, Rudolf, Dr.-Ing., GmbH. Constant current source for the operation of multiple coil systems. 3,777,252, Cl. 232-4.000.

Letsche, Hermann, to Maschinenfabrik Arbach G. Machine for slitting tubular fabrics. 3,776,077, Cl. 83-175.000.

Levaux, Rene G.: *See—*
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Lever Brothers Company: *See—*
Heide, Bastiaan Adriaan; Muller, Johannes Jacobus; and Kock, Theodorus Joannes, 3,776,858.

Leverance, Robert A.; and Moore, Morrison B., III, to United States of America, Navy. Muzzle blast suppressor. 3,776,093, Cl. 89-14.00d.

Levilion, Marc E.: *See—*
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Levin, Howard J., to American Home Products Corporation. Stabilized chlorpormazine hydrochloride solutions for use in disposable cartridges. 3,777,019, Cl. 424-175.000.

Levinos, Steven, to GAF Corporation. Production of luminescent screens. 3,776,754, Cl. 117-33.5cm.

Levinson, Melvin L. Methods for heating an article in a microwave oven. 3,777,099, Cl. 219-10.550.

Levy, M. Frank; and Schmitt, George P., to International Business Machines Corporation. Photosensitive dielectric composition and process of using the same. 3,776,729, Cl. 96-35.100.

Lewbill Industries, Inc.: *See—*
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Lewis, John Hopkins, to Columbia Pictures Industries, Inc. Film advancing and positioning apparatus. 3,776,626, Cl. 352-194.000.

Lewis, Keith; and Gleeson, Robert Leonard, to Lucas, Joseph, (Industries) Limited. Safety arrangements for road vehicles. 3,777,175, Cl. 307-10.0sb.

Libow, Mitchell: *See—*
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Licentia Patentverwaltungs-G.m.b.H.: *See—*
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Lift-All Company, Inc.: *See—*
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Ligorati, Ferdinando; Aglietti, Giancarlo; and Nova, Vittorio Emanuele, to Societa Italiana Resine S.p.A. Method of depolymerizing polyethylene terephthalate. 3,776,945, Cl. 260-475.00d.

Lilly, Eli, and Company: *See—*
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Linbro Chemical Co., Inc.: *See—*
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Lincoln Electric Company, The: *See—*
White, Duncan A.; and Morrison, William O., 3,777,103.

Lindner, Paul, to Witco Chemical Company. Water-in-oil emulsions. 3,776,857, Cl. 252-308.000.

Lindsey, Richard W. Optical data processing system. 3,777,154, Cl. 250-227.000.

Linger, Harrison K. Artist's tool and brush receptacle and conditioner. 3,776,371, Cl. 206-1.700.

Lingg, Gerhard; and Hellermann, Eberhard, to Mannesmann Aktiengesellschaft. Conveyor system with pallets, preferably for airport baggage handling. 3,776,395, Cl. 214-6.0ba.

Linke, Werner: *See—*
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Linsay, Michael: *See—*
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Linstromberg, William J.; and Nichols, Duane C., to Whirlpool Corporation. Refrigerator or the like with externally mounted water valve. 3,775,994, Cl. 62-177.000.

Lion Fat & Oil Co., Ltd.: *See—*
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, 3,776,956.

Lionello, Marini. Apparatus for acting of and reshaping the damaged bodywork of automobile vehicles. 3,776,022, Cl. 72-455.000.

Lipscomb, Walter Peter; and Turner, Garland L., to Allied Chemical Corporation. Process and apparatus for production of a nonwoven web. 3,776,796, Cl. 156-181.000.

Little, Arthur D., Inc.: *See—*
Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., 3,777,009.

Little, Carl H., to Weber-Knapp Company. Door pull. 3,775,808, Cl. 16-124.000.

Little, William S., Jr., to Xerox Corporation. Method of producing X-ray diffraction grating. 3,776,995, Cl. 264-219.000.

Litton Business Systems, Inc.: *See—*
Price, Roy H., 3,776,648.

Litton Systems, Inc.: *See—*
Einstein, Bernard Caesar, 3,777,201.
Marbury, Fendall, Jr., 3,776,167.

Tapper, William R., 3,777,098.

Livingston, Clifton W. Mining method and method of land reclamation. 3,775,984, Cl. 61-35.000.

Llewellyn, Richard E., to Westinghouse Electric Corporation. High base multiple rail fourier transform serial stage. 3,777,131, Cl. 235-156.000.

Lloyd, Neil E.; and Mather, Walter B., III, to Celanese Corporation. Pneumatic false twisting interlacer. 3,775,958, Cl. 57-77.300.

Lobermann, Erich: *See—*
Ensslin, Fritz; Frenzel, Gerhard; and Lobermann, Erich, 3,776,147.

Lobunez, Walter, to FMC Corporation. Production of methyl chloroform from ethylene and chlorine. 3,776,969, Cl. 260-668.00r.

Lock, Everett H.: *See—*
Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., 3,776,558.

Lockadoo, James Lawrence. Holder for thin flat plastic containers, particularly for blood serum. 3,776,411, Cl. 220-20.000.

Lockett, George Edward; and Hosegood, Samuel Brittan, to United Kingdom Atomic Energy Authority. High temperature nuclear reactors. 3,776,814, Cl. 176-87.000.

Lockheed Aircraft Corporation: *See—*
Richter, Alfred G., Jr., 3,776,319.

Lofink, Joseph P., to Universal Lancaster Corporation. Meter overpressure protection device. 3,776,035, Cl. 73-199.000.

Loftin, William E. Apparatus for coping a wall. 3,776,501, Cl. 249-2.000.

Lohmer, Karl; and Verburg, Werner, to Agfa-Gevaert Aktiengesellschaft. Photographic material of emulsions of different gamma and sensitivity. 3,776,733, Cl. 96-68.000.

Lonardo, Robert. Arm splint. 3,776,225, Cl. 128-77.000.

Long, James A.: *See—*
Pittman, Carl R.; and Long, James A., 3,777,290.

Long Manufacturing Co., Inc.: *See—*
Atkinson, Wallace B., 3,776,006.

Lonza Ltd.: *See—*
Volker, Theodor; and Hugener, Hanspeter, 3,776,976.

L'Oreal: *See—*
Aubin, Guy; Abrioux, Andre; and Leroy, Jules, 3,777,163.

Lorusso, Anthony M.: *See—*
Smiddy, Joseph F., 3,776,222.

Loughry, Don J., to Avco Corporation. Vertical synchronization time base error corrector. 3,777,054, Cl. 178-6.6sf.

Louvel, Guy, to Compagnie Industrielle des Telecommunications. Wide band polarizing T-connection. 3,777,287, Cl. 333-84.00m.

Lovald, Roger A.: *See—*
Glaser, David W.; and Lovald, Roger A., 3,776,865.

Love Controls Corporation: *See—*
Kohn, Mitchell I., 3,777,187.

Love, John J.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.

Lovett, Terence Oliver: *See—*
Cottrell, Arnold George; Bradford, Nevin Dornan; and Lovett, Terence Oliver, 3,776,843.

Lowe, Edward G.: *See—*
Pepmeier, Carl R.; and Lowe, Edward G., 3,775,936.

Luberoff, Benjamin J.: *See—*
Gelbein, Abramham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whitehead, Richard T., 3,776,949.

Lucas, Joseph, (Industries) Limited: *See—*
Beasley, Gordon Frank; and Whitehurst, George, 3,776,210.
Harris, Paul Anthony, 3,776,204.
Lewis, Keith; and Gleeson, Robert Leonard, 3,777,175.

Ludwig, Philip, to Deknatel, Inc. Portable pump. 3,776,666, Cl. 417-411.000.

Luger, August, to Agfa-Gevaert Aktiengesellschaft. Circuit arrangement for regulating the speed of a DC motor. 3,777,234, Cl. 318-326.000.

Luiz, Joseph W. Claw assembly for milking machines. 3,776,196, Cl. 119-14.360.

Lummus Company, The: *See—*
Gelbein, Abraham P., 3,776,937.
Gelbein, Abramham P.; Luberoff, Benjamin J.; Sze, Morgan C.; and Whitehead, Richard T., 3,776,949.
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.

Lundberg, Charles A., Jr.; and Engelhart, John E., to Esso Research and Engineering Company. N-[2-(4,5,6,7-Tetrahydrobenzothicnyl)]-ureas. 3,776,924, Cl. 260-332.20r.

Lunsford, Carl Dalton: *See—*
Chen, Ying-Ho; and Lunsford, Carl Dalton, 3,777,031.

Luo, Zung-Shyung, to Burroughs Corporation. Progammably variable capacitor for use in a capacitive function generator. 3,777,226, Cl. 317-249.00r.

Lutovsky, Josef; and Prasil, Vladimir, to Elitex, Zavody textilniho strojirenstvi generalni reditelstvi. Method of and device for detecting the yarn end from a crosswound bobbin in automatic yarn winding machines. 3,776,479, Cl. 242-35.60r.

Lutz, Michael A., to Hughes Aircraft Company. Voltage-dividing DC circuit breaker and method. 3,777,179, Cl. 307-136.000.

Luxfer USA Limited, mesne: *See—*
Mink, Wilbur H., 3,776,412.

Lynch, Edward J.; and Gray, Darwyn T., to United States of America, National Aeronautics and Space Administration. Three-axis, adjustable loading structure. 3,776,028, Cl. 73-88.00r.

Lynes, Inc.: *See—*
Malone, Billy C., 3,776,308.

Lyon, John Keith: *See—*
Kuehn, Donald E.; and Lyon, John Keith, 3,776,444.

Lysov, Nikolai Nikiforovich: *See—*
Kononenko, Vadim Grigorievich; Kushnarenko, Sergei Grigorievich; Kollerov, Vyacheslav Viktorovich; Guly, Vyacheslav Dmitrievich; Sielmakh, Viktor Alexeevich; Fedotov, Mikhail Nikitovich; and Lysov, Nikolai Nikiforovich, 3,776,021.

M & J Valve Company: *See—*
Wailes, Rodney A.; and Ottenstein, Sidney Allan, 3,776,249.

Mac Glashan, Paul V., to Engel, Paul and Armstrong, James C. Key ring. 3,776,009, Cl. 70-459.000.

Machlett Laboratories, Incorporated: *See—*
Peyser, Leonard F., 3,777,162.

Maciorowski, Anthony E. Method for encoding punch cards. 3,776,452, Cl. 234-1.000.

Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., to Oklahoma State University. Hydroclone for simultaneously separating immiscible heavier liquids and solids from a liquid medium. 3,776,385, Cl. 210-304.000.

Mackes, Ronald C.: *See—*
Anderson, Raymond E.; and Mackes, Ronald C., 3,776,145.

MacLean-Fogg Lock Nut Co.: *See—*
Grube, William L., 3,775,791.
Grube, William L., 3,775,833.

Macleay, Ronald Edward, to Pennwalt Corporation. Method of curing polymers with azo compound. 3,776,885, Cl. 260-46.50g.

MacMillan Bloedel Limited: *See—*
Barnes, Derek; and Mathur, Vishwa N. P., 3,775,860.

Madonini, Nino: *See—*
Antioletti, Attilio; and Madonini, Nino, 3,776,670.

Maennchen, Joachim Klauss: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.

Maeuszahl, Dieter: *See—*
Buehler, Arthur; Schuetz, Hans Ulrich; Maeuszahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.

Magerlein, Helmut: *See—*
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, 3,776,954.

Magid, Louis, to Hoffmann-La Roche Inc. Chewable multivitamin tablets containing aluminum nitrotinate. 3,777,029, Cl. 424-266.000.

Magilton, James H.; and Swift, Curran S., to Iowa State University Research Foundation, Inc. System and method for controlling vascular responses. 3,776,241, Cl. 128-400.000.

Magnetics, Inc.: *See—*
Laing, Alfred M., 3,777,295.

Maida, Osamu, to Nippon Kogaku K.K. Automatic exposure determining device. 3,776,111, Cl. 95-10.0cd.

Maier, Ludwig, to Monsanto Company. Process for simultaneous production of halomethylphosphonic dihalides, bis-(halomethyl)-phosphinic halides and methylhalomethylphosphinic halides. 3,776,953, Cl. 260-543.00p.

Maillet, Alfred Maric Aime, to Languepin, Carel Fouche. Machining of workpieces by electro-erosion. 3,777,108, Cl. 219-69.00p.

Majcau, Henric L.; and Thompson, Kermit J., to Boeing Company, The. Pseudo-random frequency generator. 3,777,278, Cl. 331-78.000.

Makino, Shinichi, to Tokyo Shibaura Electric Co., Ltd. Channel selector having constant current sources and compensating diode for reducing ambient temperature effects on varactor tuner. 3,777,289, Cl. 334-15.000.

Mallory, Edwin E.; and Bryant, Emerson C., to National Standard Company. Tire building apparatus (case 1). 3,776,802, Cl. 156-420.000.

Malone, Billy C., to Lynes, Inc. Safety valve arrangement for controlling communication between the interior and exterior of a tubular member. 3,776,308, Cl. 166-187.000.

Mammino, Joseph, to Xerox Corporation. Liquid developer cleaning system. 3,776,631, Cl. 355-15.000.

Manfredonia, Abraham J.: *See—*
Clark, Kenneth G.; De Pass, Ernest T.; Manfredonia, Abraham J.; and Reiter, Eugene A., 3,776,109.

Mann, Thomas A.; and Villani, Frank J., to Schering Corporation. 2-Amino-6-phenalkyl-aminopyridines and derivatives thereof. 3,776,917, Cl. 260-296.00r.

Mannesmann Aktiengesellschaft: *See—*
Lingg, Gerhard; and Hellermann, Eberhard, 3,776,395.
Vogt, Gerd, 3,776,298.

Marathon Oil Company: *See—*
Norton, Charles J.; and Falk, David O., 3,776,310.

Marbury, Fendall, Jr., to Litton Systems, Inc. Semi-submersible tender. 3,776,167, Cl. 114-43.500.

Marcatili, Enrique Alfredo Jose, to Bell Telephone Laboratories, Incorporated. Signal detection and delay equalization in optical fiber transmission systems. 3,777,149, Cl. 250-209.000.

Marcus, Paul. Injection blow molding method. 3,776,991, Cl. 264-89.000.

Marker, Hannes. Stabilizer for boots for crosscountry skiing. 3,775,866, Cl. 36-2.5al.

Marker, Hannes. Toe iron for safety ski bindings. 3,776,568, Cl. 280-11.35t.

Markovitz, Mark. Epoxy resins containing phenolic accelerators and organic titanates. 3,776,978, Cl. 260-831.000.

Markwitz, Bernhard. Inflatable swimming supports. 3,775,788, Cl. 9-344.000.

Marmel, Noah S. Method and tumbler gage for measuring key cuts. 3,775,855, Cl. 33-174.00f.

Marosi, Michael N.: *See—*
Venkata, Reddi, 3,776,783.

Marouka, Hiroyuki, to Nissan Motor Company, Limited. Ignition timing control system. 3,776,205, Cl. 123-117.00r.

Marquardt Corporation, The: *See—*
Builder, Carl H.; and Sessler, Carl W., 3,775,977.

Marsh, David John: *See—*
Adolph, Eivind; Hansen, Niels; Jensen, Jens Christian Balling; Kjoller, John; Parsons, Paul Donald; Hindle, Edward David; and Marsh, David John, 3,775,823.

Marshall, Charles J., to American Motors Corporation. Fuel evaporative control system. 3,776,256, Cl. 137-202.000.

Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, to Ciba-Geigy AG. 5-Nitrofurfurylideanalkyl derivatives, process for their manufacture and their use as feedstuff additives. 3,776,904, Cl. 260-240.00a.

Martin, Henry; Dittrich, Volker; Pissiotas, Georg; and Rohr, Otto, to Ciba-Geigy AG. Synergistically activated biocidal compositions. 3,777,024, Cl. 424-200.000.

Martin, John F.: *See—*
Collins, Richard A.; and Martin, John F., 3,775,795.

Martin, Robert W. Flexible tool holder. 3,775,923, Cl. 51-392.000.

Martindale, David L.: *See—*
Mursinna, Richard C.; and Martindale, David L., 3,775,989.

Martyn, Viktor Mikhailovich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Marwell, Edward M.; and Finger, Eugene P., to Curtis Instruments, Inc. Programmable integrator. 3,777,266, Cl. 324-182.000.

Marzinkewitsch, Rene: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.

Marzocchi, Alfred, to Owens-Corning Fiberglas Corporation. Reinforcement for tires. 3,776,293, Cl. 152-359.000.

Maschinenfabrik Arbach G.: *See—*
Letsche, Hermann, 3,776,077.

Maschinenfabrik Fahr AG: *See—*
Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, 3,776,327.

Mashimo, Yukio, to Canon Kabushiki Kaisha. Electronic flash device. 3,777,212, Cl. 315-241.00p.

Massa Division, Dynamics Corporation of America: *See—*
Barrow, Gilbert C., 3,777,192.

Massey-Ferguson Industries Limited: *See—*
Himel, Ernst C., 3,776,007.

Master Electronics Corporation: *See—*
Doyle, Joseph E., 3,776,176.

Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, to Agfa-Gevaert Aktiengesellschaft. Treatment of an imagewise exposed and developed silver halide emulsion layer containing a catalase actiye or peroxide active catalyst with perxide. 3,776,730, Cl. 96-50.00r.

Mathai, John: *See—*
Cunningham, Arthur L.; and Mathai, John, 3,776,868.

Mathauser, William R. Bicycle brake arrangement. 3,776,333, Cl. 188-344.000.

Mather, Walter B., III: *See—*
Lloyd, Neil E.; and Mather, Walter B., III, 3,775,958.

Mathur, Vishwa N. P.: *See—*
Barnes, Derek; and Mathur, Vishwa N. P., 3,775,860.

Matisa Materiel Industriel S.A.: *See—*
Sauterel, Gerard, 3,775,859.

Matsud, Jon T., to United States of America, Navy. Parachute decoupling apparatus. 3,776,493, Cl. 244-147.000.

Matsumoto, Ikuo: *See—*
Hidaka, Hiroyoshi; Matsumoto, Ikuo; and Yoshizawa, Junji, 3,776,913.

Matsushita Electric Industrial Co., Ltd.: *See—*
Azuma, Kuninori; and Nakai, Miyoji, 3,776,778.
Fujita, Osamu; and Kitao, Takaya, 3,777,288.
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.
Kohashi, Kadao; Nakamura, Tadao; and Nakamura, Shigeaki, 3,777,205.
Seri, Tsutomu; and Abe, Shinogu, 3,777,239.
Tsukamoto, Masahide; and Ohtsuka, Tetsuro, 3,776,615.

Matsuura, Eiichi, to Kabushiki Kaisha Daini Sukosha. Day-and-date changing device for a wrist watch. 3,775,966, Cl. 58-58.000.

Matsuzaki, Kiyoto: *See—*
Sobajima, Katsonobu; and Matsuzaki, Kiyoto, 3,776,588.

Mattel, Inc.: *See—*
Soulakis, George; and Whittington, Jimmie L., 3,775,897.

Mattheis, Harley H., to Ethyl Development Corporation. Display tray. 3,776,388, Cl. 211-86.000.

Matthews, Donnell R., Jr.: *See—*
Hunt, Duane A., 3,776,206.

Matthews, Douglas Frederick, to Redland Tiles Limited. Manufacture of tiles. 3,776,075, Cl. 83-110.000.

Matthews, Joseph S.: *See—*
Kelly, Kenneth K.; and Matthews, Joseph S., 3,776,901.

Mattor, John A., to Scott Paper Company. Carboxy Poly(vinyl benzal)resin. 3,776,888, Cl. 260-73.00r.

Maurer, William C.; Heilhecker, Joe K.; and Lock, Everett H., to Esso Production Research Company. Tandem packing for a reciprocating pump. 3,776,558, Cl. 277-9.000.

Maurino, William J.: *See—*
Putzer, Raymond M.; and Maurino, William J., 3,776,683.

Maus, Helmut: *See—*
Reifenhaeuser, Toni; and Maus, Helmut, 3,776,080.

Mausner, Marvin; and Rachels, Julian A., Jr., to Witco Chemical Corporation. Dry powder bubblebath composition. 3,776,861, Cl. 252-545.000.

May, John D. Tree moving apparatus. 3,775,876, Cl. 37-2.00r.

May, Sue C., to Superior Electric Company, The. Closed loop stepping motor control for a tape reader. 3,777,245, Cl. 318-685.000.

Mayer, Mayer, Jr.; and Baril, Albert, Jr., to United States of America, Agriculture. Electrostatic yarn bulking apparatus. 3,775,814, Cl. 28-1.200.

Mayer, Richard E.; Birenzvige, Amnon; and Weedon, Gene C., to Allied Chemical Corporation. Filament comprising a polymer blend of polyester and polyamide containing an organic phosphorus compound. 3,776,806, Cl. 161-88.000.

Mayo, Frederick W.; Spires, Billy G.; and Bockelman, William M., to Burners, Inc. Apparatus for heating localized areas of pipe. 3,776,689, Cl. 432-183.000.

Mazur, Thomas, to Motorola, Inc. Light sensitive gating of trial near or at zero crossing point. 3,777,188, Cl. 307-311.000.

Mazzenga, Anthony, to Garan, Incorporated. Design coding for coordinated garment sets. 3,775,775, Cl. 2-80.000.

McAtee, Daniel J.: *See—*
Davies, Phillip J.; Gasparri, Angelo S.; and McAtee, Daniel J., 3,777,260.

McBrien, Roger Willaim. Laboratory support clamp structure. 3,775,807, Cl. 16-114.00r.

McCall Printing Company, The: *See—*
Edwards, William M., 3,776,543.

McCambridge, James E.: *See—*
Ficholz, Arthur H.; and McCambridge, James E., 3,775,951.

McCann, John J.; and Scarpetti, Julius J., to Polaroid Corporation. Stimulus print. 3,776,725, Cl. 96-2.000.

McCann, Milton H., to Wheeling Stamping Company. Tube annealing method. 3,776,785, Cl. 148-13.000.

McCarthy, Charles D.: *See—*
Foley, Charles F.; and McCarthy, Charles D., 3,776,485.

McCarthy, Paul R.: *See—*
Bailey, Wayne W.; and McCarthy, Paul R., 3,776,846.

McClure, James D.; and Conklin, George W., to Shell Oil Company. Process for the production of polyisocyanates. 3,776,935, Cl. 260-453.0pc.

McClure, Robert E., Jr. Fence post spade. 3,775,924, Cl. 52-155.000.

McDaniel, Carl V.: *See—*
Rundell, Clark A.; and McDaniel, Carl V., 3,777,006.

McDermott, Ray J., & Co., Inc.: *See—*
Shaw, Clarence W., 3,775,985.

McDonic, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, to RCA Corporation. Non-thermionic electron emissive tube comprising a ceramic heater substrate. 3,777,209, Cl. 313-238.000.

McDonough, Cletus, to Molex Incorporated. Hole liner for printed circuit boards. 3,777,303, Cl. 339-258.00r.

McDowall, Frederick A.: *See—*
Mercer, Cecil S.; Beveridge, Archibald D.; and McDowall, Frederick A., 3,775,930.

McEwan, Gilbert J.: *See—*
Alul, Husni R.; and McEwan, Gilbert J., 3,776,962.

McEwen, James Eric, to Multi Fittings Limited. Water closet coupling. 3,775,780, Cl. 4-252.00r.

McFadden, Edward L.: *See—*
Anderson, George A.; Burne, Frederick A.; Neunaber, Neil O.; and McFadden, Edward L., 3,776,303.

McFarland, Harold A., to Medical Development Corporation. Dynamic cervical support. 3,776,224, Cl. 128-75.000.

McGee, Roger V., Jr. Trotline dispenser. 3,775,893, Cl. 43-54.50a.

McGovern, Terrence P.; Beroza, Morton; and Fiori, Bart J., to United States of America, Agriculture. Esters of 1,4-benzodioxan-2-carboxylic acid as attractants for the European chafer. 3,777,017, Cl. 424-84.000.

McHugh, John P.: *See—*
Howard, Arthur G.; and McHugh, John P., 3,776,215.

McIlhinney, Allan Edward: *See—*
Capes, Charles Edward; McIlhinney, Allan Edward; and Tweddle, Thomas Allen, 3,776,601.

McIntyre, Kevin M. Detecting impaired heart mechanical performing and apparatus therefor. 3,776,221, Cl. 128-205.000.

McIver, Peter John, to Cominco Ltd. Solid polyphosphoric acid. 3,777,008, Cl. 423-316.000.

McKay, Robert Bruce; and Bradley, Gordon Frank, to Ciba-Geigy AG. Diarylide pigment compositions. 3,776,749, Cl. 106-288.00q.

McKee, Robert C., to Institute of Paper Chemistry, The. Apparatus and method for testing the runnability of corrugating medium. 3,776,029, Cl. 73-88.00r.

McKim, Robert G.: *See—*
Damm, David A.; and McKim, Robert G., 3,776,380.

McKinnon, Richard L., to Specialized Products, Inc. Apparatus for stirring grain. 3,776,512, Cl. 259-102.000.

McLaughlin, Charles S. Golf club swing training device. 3,776,556, Cl. 273-186.00a.

McLeod, John H., Jr., to Thoreson-McCosh, Inc. Valve for vacuum loader. 3,776,600, Cl. 302-59.000.

McMahon, Floyd J.: *See—*
Gill, Raymond B.; and McMahon, Floyd J., 3,776,315.

McPnee, Charles J., to American Hospital Corporation. Medical liquid administration set for rate or volume delivery. 3,776,229, Cl. 128-214.00e.

McWabb, James R. Basketball retrieval and return device. 3,776,550, Cl. 273-1.50a.

Meacham, James Frank, to I-T-E Imperial Corporation. Mounting means for trim plate of panelboard. 3,777,224, Cl. 317-120.000.

Meacham, James H., to Westinghouse Electric Corporation. Technique for all-digital television sync generation. 3,777,063, Cl. 178-69.50g.

Mead Corporation, The: *See—*
Duffield, Peter L., 3,777,307.
Sanders, Frederick W., 3,776,742.

Meas, Raymond J., to Corning Glass Works. Winding apparatus. 3,776,482, Cl. 242-67.10r.

Mechaneer, Inc.: *See—*
Hoy, Robert P.; and Gray, Robert C., 3,776,397.

Meckler, Helmut; and Barwasser, Hans Gunter, to Wernicke & Co. K.G. Machine for grinding the rim of a spectacle lens. 3,775,908, Cl. 51-72.00r.

Medema, Dirk: *See—*
Van der Ven, Servaas; and Medema, Dirk, 3,776,895.

Medendorp, Roger L., to Kirkhof Manufacturing Corporation. Anti-theft display container for magnetic tape cartridge. 3,776,374, Cl. 206-45.140.

Medical Development Corporation: *See—*
Holbrook, Le Grand K.; and Fowley, Ronald D., 3,776,231.
McFarland, Harold A., 3,776,224.

Medkeff, Arthur T.: *See—*
Nye, Norman H.; and Medkeff, Arthur T., 3,776,674.

Mednikow, Leon. Aircraft-landing strip device. 3,776,166, Cl. 114-43.500.

Medovar, Boris Izrailevich: *See—*
Paton, Boris Evgenievich; Medovar, Boris Izrailevich; Latash, Jury Vadimovich; Chekotilo, Leonty Vasilievich; Emelyanenko, July Georgievich; Us, Vasily Ivanovich; Baglai, Vitaly Mikhailovich; Martyn, Viktor Mikhailovich; Artamonov, Viktor Leonidovich; Bondrenko, Oleg Petrovich; Boiko, Georgy Alexandrovich; Tsikulenko, Anatoly Konstantinovich; Ivon, Vasily Vladimirovich; and Pavlov, Leonid Viktorovich, 3,776,294.

Meerbott, William K.: *See—*
Moravec, Vincent J., Jr.; and Meerbott, William K., 3,776,840.

Mefina S.A.: *See—*
Casas-Robert, Ramon, 3,776,160.
Fresard, Marcel, 3,776,336.

Mehia, Madhokumar A., to GTE Automatic Electric Laboratories Incorporated. Fault detection and localization in digital systems. 3,777,129, Cl. 235-151.300.

Meister, Rene: *See—*
Besson, Rene; Schneiter, Ali; and Meister, Rene, 3,775,965.

Melder, Robert C.: *See—*
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, 3,776,047.

Melind, Julius J., to Fisher, H. L., Mfg. Co., Inc. Turret type feeder for spray machine. 3,776,420, Cl. 221-211.000.

Melling, Richard; and Pickard John, to Triplex Safety Glass Company Limited. Method of toughening glass sheets. 3,776,709, Cl. 65-114.000.

Melsom, Henry Roy Francis: *See—*
Mitchell, David Thomas Somerled; and Melsom, Henry Roy Francis, 3,775,805.

Menashi, Wilson P.; Wenckus, Joseph F.; and Castonguay, Roger A., to Little, Arthur D., Inc. Method for direct melt synthesis of intermetallic compounds. 3,777,009, Cl. 423-508.000.

Menger, Joe L.; and Thornton, Bryce G., to Addressograph-Multigraph Corporation. Device for selectively passing and blocking sheets of planar material depending upon the orientation thereof. 3,777,120, Cl. 235-61.11r.

Menia, Daniell. Punch wheel in machines for composing lead type lines. 3,776,370, Cl. 199-56.000.

Menn, Julius J.: *See—*
Teach, Eugene G.; and Menn, Julius J., 3,777,035.

Mensing, Arthur E.: *See—*
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Meyer, Robert W.; and Pedrick, John L., to Scott Paper Company. Method and apparatus for distributing fluids. 3,776,471, Cl. 239-553.500.

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Michel, Rupprecht, to Kraftwerk Union Aktiengesellschaft. Air-cooled condensation apparatus. 3,776,306, Cl. 165-111.000.

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Miki, Masamitsu. Method for producing sleeves or sheets for feeder heads formed in metal casting and an apparatus therefor. 3,776,992, Cl. 264-122.000.

Milano, Gerard M., to Arvey Corporation. Method of making pouches. 3,776,798, Cl. 156-269.000.

Milbourne, Banjamin K., Jr. Safety closure. 3,776,406, Cl. 215-9.000.

Miller, Dennis Brian, to Western Electric Company, Incorporated. Methods and apparatus for imparting a desired orientation to an article. 3,776,394, Cl. 214-1.00r.

Miller, Donald N., to Eastman Kodak Company. Process for internal cleaning of electrodes. 3,776,774, Cl. 134-7.000.

Miller, Emery P., to Ransburg Electro-Coating Corporation. Material deposition apparatus for an organometallic. 3,776,181, Cl. 118-49.500.

Miller, George A.; and Greenfield, Stanley A., to Rohm and Haas Company. Substituted 1-(2-hydroxybenzylidene)-4-alkoxycarbonylthiosemicarbazides and related compounds. 3,776,942, Cl. 260-470.000.

Miller, Henry F.: *See—*
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Miller, Stewart Edward, to Bell Telephone Laboratories, Incorporated. Mode detection and delay equalization in multimode optical fiber transmission systems. 3,777,150, Cl. 250-209.000.

Mills, King L., to Phillips Petroleum Company. Carbon black pelleting process. 3,776,750, Cl. 106-307.000.

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Misch, Wolfgang; Domain, Helmut; and Adler, Karl-Heinz, to Bosch, Robert, G.m.b.H. Electronic slip control. 3,776,322, Cl. 172-2.000.
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Monaghan, Frank. Diagnostic swab with stored culture medium. 3,776,220, Cl. 128-2.00w.
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Oefinger, Richard W., to USM Corporation. Fastener driving tool with slidable fastener guide. 3,776,443, Cl. 227-10.000.
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Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, to Papst-Motoren KG. Dynamo electric machine construction. 3,777,191, Cl. 310-67.000.
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Pereman, Morris, to Carbide Form Grinding, Inc. Apparatus for cutting continous slide fastener chains into slide fasteners of predetermined length. 3,776,078, Cl. 83-210.000.

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Perison, Ronald C., Sr., to Standard Mirror Company, Inc. Shatterproof rear vision mirror assembly fabrication. 3,776,618, Cl. 350-288.000.

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Perrin, Jacques. Method of stabilization of plant roots and extracts thus stabilized. 3,777,021, Cl. 424-195.000.

Perron, Robert R.; and Pastan, Harvey L., to Eastern Company, The. Peak holding circuit. 3,777,263, Cl. 324-103.00p.

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Perry, James H., to Norton Company. Automatic pulp grinder control. 3,776,475, Cl. 241-33.000.

Pessen, David W. Quick-release mechanism for self-locking mating worms. 3,776,060, Cl. 74-424.700.

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Peters, Allen; and Ryan, William J. Stabilizable scaffolding support bracket. 3,776,498, Cl. 248-221.000.

Peters, Edwin F., to Owens-Illinois, Inc. Transistor control apparatus. 3,777,182, Cl. 307-268.000.

Peters, Erwin F., to Owens-Illinois, Inc. Transistor control apparatus. 3,777,183, Cl. 307-268.000.

Peters, James R., to Universal Products Development Corporation. Self-watering flower pot. 3,775,904, Cl. 47-38.100.

Peters, Philip H., Jr., to Environment/One Corporation. Thermally insulated cookware for dynamic induction field heating and cooking apparatus. 3,777,094, Cl. 219-10.490.

Peterson, John L., to United States of America, Health, Education, and Welfare. Scintillation analysis system. 3,776,695, Cl. 23-230.0pc.

Peterson, Louis H.; and Rogers, Edward F., to Merck & Co., Inc. 4-(and 5-) -Loweralkoxycarbonylamino-1-naphthyl-N-loweralkylcarbamates. 3,776,943, Cl. 260-471.00c.

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Peyman, Gholam A.; and Dodich, Nicholas A., to University of California, The Regents of the. Ophthalmic instrument. 3,776,238, Cl. 128-305.000.

Peyser, Leonard F., to Machlett Laboratories, Incorporated. Cassette locking mechanism. 3,777,162, Cl. 250-468.000.

Pez, Guido P., to Allied Chemical Corporation. Metal-organo compounds with sterically exposed metal-metal bonds, and a method for their production. 3,776,932, Cl. 260-429.300.

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Pichette, Edmond A. Fluid-stabilized shaft. 3,776,609, Cl. 308-9.000.

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Pieters, Leon Andre, to Image Analysing Computers Limited. Video signal level correction circuitry. 3,777,056, Cl. 178-7.100.

Pigney, James Malcolm: *See—*
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Pike, John Francis. Containers. 3,775,903, Cl. 47-37.000.

Pilger, James P.: *See—*
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Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Pilkington Brothers Limited: *See—*
Wilde, Dennis; and Ormskirk, Hoscar NR, 3,776,712.

Pinkowski, Norman J.: *See—*
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Pipe Machinery Company, The: *See—*
Urbanic, Robert F., 3,776,655.

Piret, Jean, to Automobiles Peugeot and Regie Nationale des Usines Renault. Automatic transmissions. 3,776,066, Cl. 74-763.000.

Pirker, Rudolf; and Kelchner, Roland, to Licentia Patentverwaltungs-G.m.b.H. Self-cleaning oven. 3,776,216, Cl. 126-197.000.

Pisciotta, Immacolata. Dressmaker chalk sharpener. 3,776,068, Cl. 76-82.000.

Pish, Paul. Linear to rotary motor. 3,776,106, Cl. 92-33.000.

Pissiotas, Georg: *See—*
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Pissiotas, Gerog: *See—*
Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.

Pitesky, Isadore; and Barsby, James B. Portable hyperventilation relieving device. 3,776,227, Cl. 128-203.000.

Pittman, Carl R.; and Long, James A., to Arvin Industries, Inc. Touch tuning and control circuits. 3,777,290, Cl. 334-15.000.

Plantholt, Richard H.: *See—*
Staker, Donald D.; Plantholt, Richard H.; and Kriege, David J., 3,776,928.

Plescia, Joseph J., to General Electric Company. Exhaust machine leak detector and shut off. 3,776,025, Cl. 73-45.100.

Pogany, Alfred: *See—*
Kapolyi, Laszlo; Lazar, Ferenc; Galauner, Bela; Dzsida, Laszlo; Vamos, Gyorgy; Wagner, Laszlo; and Pogany, Alfred, 3,776,717.

Pohl, Dieter, to International Business Machines Corporation. Laser generator of TE wave guide modes. 3,777,280, Cl. 331-94.500.

Polaroid Corporation: *See—*
Baker, Philip G.; Cook, Gerald H.; and Downey, Rogers B., 3,776,425.
Driscoll, John J.; and Whall, James M., 3,776,118.
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Land, Edwin H., 3,776,726.
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Polidora, Frank J. Windshield visor. 3,776,590, Cl. 296-95.00r.

Pollack, John L.: *See—*
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Polytop Corporation: *See—*
Hazard, Robert E., 3,776,428.

Pomeroy, Raymond Visher, to Omark Industries, Inc. Pneumatic fastener driving device. 3,776,445, Cl. 227-130.000.

Ponder & Best, Inc.: *See—*
Fountain, Gerald F., 3,776,625.

Pont-A-Mousson S.A.: *See—*
Leblond, Christian, 3,776,509.

Post, Robert L., Sr. Animal feeder. 3,776,193, Cl. 119-51.500.

Potter, Frederick Milton, to Bendix Corporation, The. Support for generator bearing. 3,777,195, Cl. 310-91.000.

Poupin, Raymond, to Service d'Exploitation Industrielle des Tabacs et des Allumettes. Control device for a mark on a continuously moving band. 3,777,166, Cl. 250-555.000.

Poutsma, Tjeerd J. Machine to separate pods or similar discrete fruit from its associate vine or plant. 3,775,953, Cl. 56-126.000.

Powell, Harold R.; Dunn, Cornelius C.; and Burke, John R., to Pennwalt Corporation. Vacuum stoppering apparatus with pegboard shelf adjustment. 3,775,942, Cl. 53-264.000.

Power Systems Inc.: *See—*
Lahti, Abbott W., 3,777,235.

Powers Chemco, Inc.: *See—*
Pande, Kailash C.; and Kallenbach, Stanely E., 3,776,889.

PPG Industries, Inc.: *See—*
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Patil, Pandit G., 3,775,914.
Seymour, Samuel L., 3,776,708.

Simon, Martin J., 3,776,878.

Praeg, Walter F., to United States of America, Atomic Energy Commission. Active crowbar for a switching magnets. 3,777,176, Cl. 307-108.000.

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Precision Flexmold, Inc.: *See—*
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Preformed Line Products Co.: *See—*
Smrekar, Clarence E.; and Goetter, Erwin H., 3,775,811.

Prescott, Elsworth; and Copus, Edward F., to Copolymer Rubber & Chemical Corporation. Method of packaging friable bales of elastomeric material. 3,775,933, Cl. 53-24.000.

Preston, Thomas William; and Reece, Albert Benjamin John, to English Electric Company, Limited, The. Attachment assembly for stator windings. 3,777,197, Cl. 310-194.000.

Preussag Aktiengesellschaft: *See—*
Kuhlmann-Schaefer, Wilhelm H.; and Dinter, Manfred E., 3,776,593.

Preussag Aktiengesellschaft- Metall: *See—*
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Price Brothers Company: *See—*
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Price, Gareth G.: *See—*
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Price, Roy H., to Litton Business Systems, Inc. Looseleaf binder mechanism. 3,776,648, Cl. 402-17.000.

Probst, Richard O., to Ransburg Electro-Coating Corporation. Electrostatic deposition apparatus. 3,776,187, Cl. 118-626.000.

Procter & Gamble Company, The: *See—*
Sutphin, Richard A., 3,775,938.

Prodorite Limited: *See—*
Baker, Frank George Morley, 3,776,414.

Proffit, Lester M. Swimming pool cleaner. 3,776,464, Cl. 239-229.000.

Propper Manufacturing Co., Inc.: *See—*
Heine, Helmut A., 3,776,619.

Propst, Robert L. Log cutting apparatus. 3,776,083, Cl. 83-324.000.

Prost, Alfred: *See—*
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Pullman Incorporated: *See—*
Carmel, Edwin L.; and Schirmer, Olaf W., 3,776,569.
Cox, John M.; Kunst, Robert J.; and Szala, Norman M., 3,776,143.

Puretic, Mario J. Fish impeller. 3,775,890, Cl. 43-6.500.

Purity Packaging Limited: *See—*
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Purnell, Michael G.: *See—*
Waszink, Remco P.; and Purnell, Michael G., 3,776,302.

Putzer, Raymond M.; and Maurino, William J., to Precision Flexmold, Inc. Apparatus for molding articles. 3,776,683, Cl. 425-440.000.

Quanquin, Bernard; Trimbach, Honore; and Pierre, Dumont, to Azote et Produits Chimiques S.A. KCl-phosphate granules. 3,776,713, Cl. 71-33.000.

Quick, Donald Jonathan, to International Harvester Company. Bucket for earth moving machines. 3,775,879, Cl. 37-118.00r.

Quinn, Lawrence R.; and Bielenberg, Max J., to Roura Iron Works, Inc. Punching and extrusion die. 3,776,016, Cl. 72-327.000.

R. F. Inc., mesne: *See—*
Rice, Charles A.; and Foust, Michael L., 3,775,782.

Rabinow, Jacob. Dynamically-balanced phonograph arm. 3,776,557, Cl. 274-23.00r.

Rabut, Eugene W., to Udylite Corporation, The. Arrangement for mounting semi-conductive device to heat sinks. 3,777,238, Cl. 317-234.00r.

Rachels, Julian A., Jr.: *See—*
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Radabaugh, Gary L.: *See—*
Chambers, Bruce B.; and Radabaugh, Gary L., 3,775,915.

Rager, Charles E. Buoy mooring device. 3,775,787, Cl. 9-8.00r.

Rahenkamp, Robert A.: *See—*
Kolpek, Robert A.; Rahenkamp, Robert A.; and Stewart, William R., Jr., 3,777,072.

Rai, Charanjit, to Cities Service Oil Company. Reforming catalyst. 3,776,860, Cl. 252-455.00r.

Rajonha, Jaroslav; Bures, Ladislav; and Burget, Bohumir, to Elitex, Zavody textilniho strojirenstvi Generalni reditelstvi. Device for separating fibrous material for use with textile machines. 3,775,956, Cl. 57-58.910.

Raney, William E.; and Siebert, Milan J. Device for pushing and pulling implements, including cables, into and from conduits and the like. 3,776,179, Cl. 118-8.000.

Ransburg Electro-Coating Corporation: *See—*
Miller, Emery P., 3,776,181.
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Ranz, Erwin: *See—*
Matejec, Reinhart; Meyer, Rudolf; Moll, Franz; Ranz, Erwin; and Weyde, Edith, 3,776,730.

Rapkin, Edward; and Thomas, Edward W., to Intertechnique S.A. Gamma spectrometry system for sample analysis. 3,777,144, Cl. 250-366.000.

Rarey, Kenneth W.; and Kennedy, John B., Jr., to Continental Can Company, Inc. Falling developer curtain printing and coating. 3,776,132, Cl. 101-129.000.

Ratcliffe, Elsie: *See—*
Ratcliffe, Harry; and Ratcliffe, Elsie, 3,776,235.

Ratcliffe, Harry; and Ratcliffe, Elsie. Portable female urinal. 3,776,235, Cl. 128-295.000.

Rathmell, Richard K. Ski boot with latchable articulated leg holder. 3,775,872, Cl. 36-2.5al.

Ratts, Kenneth Wayne, to Monsanto Company. S-Dichloromethyl oxyphosphorus thioates. 3,776,984, Cl. 260-943.000.

Rau, Karlheinz: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.

Rawlins, Charles B., to Aluminum Company of America. Spacer damper. 3,777,047, Cl. 174-42.000.

Ray, William E. Polyurethane foam insert for overexpanded rocket engine nozzles to prevent start transient sideloads. 3,776,466, Cl. 239-265.150.

Ray-Chaudhuri, Dilip K.: *See—*
Iovine, Carmine P.; and Ray-Chaudhuri, Dilip K., 3,776,983.

Raymond, Jan W.; and Taketani, Hideo, to United States of America, Atomic Energy Commission. Hydriding process. 3,776,855, Cl. 252-301.10r.

Raypak, Inc., mesne: *See—*
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Raytheon Company: *See—*
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RCA Corporation: *See—*
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McDonie, Arthur Frederick; Faulkner, Richard Dale; and Rhoads, James Lee, 3,777,209.
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Matthews, Douglas Frederick, 3,776,075.

Reece, Albert Benjamin John: *See—*
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Reed, Clifton G. Instrument mount. 3,776,496, Cl. 248-182.000.

Reed, David Arthur, to Imperial Chemical Industries Limited. Clip applicator. 3,775,826, Cl. 29-212.00d.

Reed, Robert E.: *See—*
Maciula, Andrew; Tiederman, William G.; and Reed, Robert E., 3,776,385.

Reed, Robert G.: *See—*
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Rees, James D., to Xerox Corporation. Illumination system. 3,777,135, Cl. 240-41.35r.

Refice, Alfred F.: *See—*
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Regie National des Usines Renault: *See—*
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Regie Nationale des Usines Renault: *See—*
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Rehm, Frederick H.: *See—*
Stevenson, Elbert H., 3,776,795.

Reich, Andreas: *See—*
Houpert, Bernd; and Reich, Andreas, 3,776,777.

Reidy, Regina. Sewing aid device for, and method of, setting a sleeve in the armhole of a bodice. 3,776,436, Cl. 223-1.000.

Reifenhaeuser, Toni; and Maus, Helmut, to Reifenhaeuser, Toni. Cutting apparatus. 3,776,080, Cl. 83-262.000.

Reifenhaeuser, Toni: *See—*
Reifenhaeuser, Toni; and Maus, Helmut, 3,776,080.

Reinert, Charles P.; and Tutt, Samuel F., to Winona Research, Inc. Biological product and process for treating and restoring honeycombs infected with bacillus larvae (American Foulbrood disease). 3,775,786, Cl. 6-12.00r.

Reinis, Gedeminas J.: *See—*
Krohn, Ivar T.; Page, Geoffrey A.; and Reinis, Gedeminas J., 3,776,721.

Reiter, Eugene A.: *See—*
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Reitter, George M., to Eastman Kodak Company. Receptacle for a roll, reel or cassette of photographic film. 3,776,483, Cl. 242-71.001.

Remane, Peter. Containers with valve filled with a fluid under pressure. 3,776,427, Cl. 222-394.000.

Remers, William Alan; and Weiss, Martin Joseph, to American Cyanamid Company. 2-Nitro-4-oxo-4,5,6,7,-tetrahydroindole. 3,776,923, Cl. 260-326.160.

Ren, Mann: *See—*
Shichman, Daniel; Miller, Henry F.; and Ren, Mann, 3,776,054.
RENA Buromaschinenfabrik GmbH and Co., Firma: *See—*
Moser, Erich, 3,776,340.
Renker, Heinz, to Siemens Aktiengesellschaft. Method of producing insulated semiconductors regions. 3,776,788, Cl. 156-17.000.
Renner, Darwin S.: *See—*
Groce, Larry A.; and Renner, Darwin S., 3,777,217.
Research and Development Laboratories of Ohno Co., Ltd.: *See—*
Ohno, Genjt; and Inoue, Eiichi, 3,776,630.
Research Corporation: *See—*
Story, Paul H., 3,776,926.
Resil Processes Limited: *See—*
Boden, Donald; and Young, Leslie, 3,776,503.
Reuter, Brian R., to Consolidated Engineering Company. Self-purging, pneumatic conveying apparatus including fluid flow pumps on scales, with agitator, vacuum filled, with material dryer, and of varied means of sequential value operation. 3,776,599, Cl. 30-3.000.
Reynolds, David L.: *See—*
Youngblood, Douglas J.; and Reynolds, David L., 3,776,838.
Reynolds, R. J., Tobacco Company: *See—*
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Reynolds, Richard W. Backup tape for narrow gap welding. 3,777,114, Cl. 219-160.000.
Reznitsky, Alexandr Mikhailovich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.
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Riat, Henri: *See—*
Hegar, Gert; and Riat, Henri, 3,776,918.
Ribich, Thomas A., to Weldon Tool Company, The. Rotating cutting tool. 3,775,819, Cl. 29-103.00a.
Rice, Arthur A. Stethoscope headset. 3,776,362, Cl. 181-24.000.
Rice, Charles A.; and Foust, Michael L., to R. F. Inc., mesne. Inflatable aquatic rescue board and method of rescue. 3,775,782, Cl. 5-82.000.
Rice, Harold B., to Burton, John, Machine Corporation. Method and apparatus for removing screw caps from containers. 3,775,829, Cl. 29-426.000.
Rich, Edward L. Paint spray mask locating assembly. 3,776,180, Cl. 118-301.000.
Richards, Dennis Maunder, to English Clays Lovering Pochin & Company, Limited. Method of preparing surfacing composition for roads airfield runway and the like. 3,776,748, Cl. 106-280.000.
Richards, John F., to Fluid Kinetics Corporation. Fluid blow-off silencer. 3,776,365, Cl. 181-50.000.
Richards, William E., to United States of America, Navy. Metal vapor laser tube. 3,777,282, Cl. 331-94.500.
Richardson Ink Co.: *See—*
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Richco Plastic Company: *See—*
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Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., 3,776,119.
Richter, Alfred G., Jr., to Lockheed Aircraft Corporation. Accessory for a right angle drill tool. 3,776,319, Cl. 173-36.000.
Richter, Paul D.; Janchus, Robert M.; and Shen, Shih C., to Envirotech Corporation. Apparatus for rotary filters. 3,776,386, Cl. 210-398.000.
Ricoh Co., Ltd.: *See—*
Kobayashi, Yugoro, 3,776,117.
Ridley, Kenneth Arthur, to Ilford Limited. Steering device for travelling web. 3,776,442, Cl. 226-198.000.
Rieber & Son Plastic-Industri A/S: *See—*
Parmann, Gunnar, 3,776,682.
Riedo, Otto. Equipment on the human body for giving signals, especially in connection with alarm systems. 3,777,086, Cl. 200-52.00n.
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., to Lummus Company, The. Dehydrogenation process. 3,776,967, Cl. 260-666.00a.
Rieger, Helmuth: *See—*
Gross, Werner Johann; Lanzerath, Gunter Franz; Patzer, Helmut Karl; Maennchen, Joachim Klauss; Rieger, Helmuth; and Weiberg, Horst, 3,776,562.
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Riemerschmid, Fritz, to Motoren- und Turbinen-Union Munchen GmbH. Means for actuating a multiple tube jet defector device. 3,776,467, Cl. 239-265.350.
Riester, Oskar: *See—*
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Riggs & Lombard, Inc.: *See—*
Wilcox, Harold R., 3,776,252.
Riley, Jack C., 50% to Taft, Russell E. and Taft, Andrey D. Apparatus for effecting chemical treatment of a liquid flowing through a pipe. 3,776,274, Cl. 137-599.000.
Riley, John R. Material spreader system with hydraulic drive and speed control means. 3,776,431, Cl. 222-178.000.
Rinaldi, Joseph A.: *See—*
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Ritzerfeld, Gerhard. Moistening apparatus and method for duplicator sheets. 3,776,133, Cl. 101-147.000.
Robbins, John D.; and Wanner, Louis R., to GTE Sylvania Incorporated. Tri-color cathode ray tube employing a shadow mask having elongated apertures. 3,777,204, Cl. 313-85.00s.
Roberts, Cecil P., to Anchor Hocking Corporation. Roller sealing means for sealing containers with closure caps. 3,775,944, Cl. 53-334.000.
Roberts, Timothy, Jr. Stool specimen test kit. 3,775,777, Cl. 4-1.000.
Robins, A. H., Company: *See—*
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Robinson, Thomas C.: *See—*
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Rochelle, William R.; and Smith, Leif H., to Brown & Root, Inc. Method and apparatus for laying a submergible elongate structure. 3,775,987, Cl. 61-72.300.
Rock-Ola Manufacturing Corporation: *See—*
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Rockwell International Corporation: *See—*
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Gage, Arthur F.; and Stamm, Alex F., 3,776,446.
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Roedel, Paul. Patty-former. 3,775,809, Cl. 17-32.000.
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Rogers, Meyric K.: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.
Rogers, Robert Kenneth. Apparatus for dyeing and/or washing fabric. 3,776,005, Cl. 68-5.00e.
Rohdin, Howard A., to Packaging Industries Inc. Free-standing blister package. 3,776,375, Cl. 206-45.340.
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Rohm, Gunter Horst. Hand gun for signaling or warning purposes. 3,775,888, Cl. 42-58.000.
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Martin, Henry; Janiak, Stefan; Pissiotas, Gerog; and Rohr, Otto, 3,776,904.
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Rokujyo, Masaharu: *See—*
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Rolamite, Incorporated: *See—*
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Rolle, Albert L., to United States of America, Navy. Acoustic lens. 3,776,361, Cl. 18-.50a.
Roller Bearing Company of America: *See—*
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Rolls-Royce (1971) Limited: *See—*
Ballard, Norman Edmund, 3,776,747.
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Ronner, Fritz: *See—*
Sutter, Fritz; and Ronner, Fritz, 3,776,529.
Roodvoets, Roger J.; and Nielsen, Edward G., to Laser Alignment, Inc. Method for installing ceilings. 3,775,929, Cl. 52-747.000.
Rooks, Gerald T., to Circuit Equipment Corporation. Beveling machine and method. 3,776,097, Cl. 90-16.000.
Rosaen, Nils O. Flow indicator device with sealing means. 3,776,037, Cl. 73-228.000.
Rosby, Sven-Olof: *See—*
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.
Rose, Jack B., to Rowin, Incorporated. Steering wheel control device. 3,776,064, Cl. 74-557.000.
Rosenberg, Harry: *See—*
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Ross, Irving D., Jr., to Youngstown Steel Door Company, The. Sealing cam interlock. 3,776,581, Cl. 292-39.000.
Ross, Richard T., to Scott Paper Company. Method and apparatus for applying small amounts of liquid substance to a web. 3,776,763, Cl. 117-105.300.
Ross, Stephen T.; and Zirkle, Charles, to Smithkline Corporation. Anorectic compositions comprising N-pyridylalkyl -β-alkoxy-β-trifluoromethylphenalkylamines. 3,777,027, Cl. 424-263.000.
Ross, Thurston H., Jr.: *See*—
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Fluchter, Horst; and Rossmann, Christian, 3,776,852.
Roth, Edward. Three wheeled motor vehicle. 3,776,353, Cl. 180-27.000.
Roth, Shirley H., to Cities Service Company. Process for protecting a substrate with an N-4-substituted aminoarylsulfonamide intumescent agent. 3,776,765, Cl. 117-136.000.
Rothenbuhler Engineering Company: *See*—
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, 3,776,047.
Rothenbuhler, Howard E.; Melder, Robert C.; and Cotter, John Lawrence, to Rothenbuhler Engineering Company. Means for oscillating one of a pair of relatively rotatable members. 3,776,047, Cl. 74-70.000.
Rothmans of Pall Mall Canada Limited: *See*—
Jamieson, Patrick J., 3,777,121.
Rothrock, Burton J.: *See*—
Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., 3,775,810.
Roura Iron Works, Inc.: *See*—
Quinn, Lawrence R.; and Bielenberg, Max J., 3,776,016.
Roussel-UCLAF: *See*—
Gasc, Jean-Claude; and Pierdet, Andre, 3,776,902.
Rowan, Robert L. Simulator for teaching suturing techniques. 3,775,865, Cl. 35-17.000.
Rowe, Wilson S., to United States Steel Corporation. Method of processing stainless steel strips or sheets. 3,776,784, Cl. 148-12.000.
Rowin, Incorporated: *See*—
Rose, Jack B., 3,776,064.
Rowland, Stanley P.: *See*—
Franklin, William E.; and Rowland, Stanley P., 3,776,692.
Roy, Prodyot; and Young, Robert S., to United States of America, Atomic Energy Commission. Device for measuring oxygen activity in liquid sodium. 3,776,831, Cl. 204-195.00s.
Royer, Clady J. Earth excavating apparatus. 3,776,317, Cl. 172-777.000.
Royka, Stephen F.; and Weiler, Ernest A., to Xerox Corporation. Liquid transfer electrophotographic development process. 3,776,723, Cl. 96-1.0ly.
Ruckluft Patent AG, mesne: *See*—
Murphy, Edmund, 3,775,993.
Ruddick, Maurice, to Burnett & Rolfe, Limited. Beer kegs and like containers. 3,776,260, Cl. 137-321.000.
Rumble, Robert C.: *See*—
Hoyer, Wilmer A.; Rumble, Robert C.; Britton, Donald H.; and Ball, John D., 3,777,147.
Rundell, Clark A.; and McDaniel, Carl V., to Grace, W. R., & Co. Process for preparing zeolitic bodies having high strength characteristics. 3,777,006, Cl. 423-118.000.
Runge, Heinz, to Krafter Corporation. Method and apparatus for preparing cheese cuts. 3,776,073, Cl. 83-47.000.
Ruof, Edgar J., to Goodyear Tire & Rubber Company, The. Electrically controlled braking system. 3,776,605, Cl. 303-21.00a.
Rupp, Hans-Dieter; Meyer, Gerhard; and Magerlein, Helmut, to Akzo N.V. Process for the production of thiphosgene. 3,776,954, Cl. 260-543.000.
Rusco Industries, Inc.: *See*—
Miller, Richard A., 3,775,783.
Ruscoe, W. J., Company: *See*—
Christensen, Jens Jude, 3,776,876.
Rushforth, Calvin: *See*—
Tine, Sebastian David; and Rushforth, Calvin, 3,776,200.
Rusk, Gerald R.; and Kock, Robert E., to Freeman Supply Company, The. Guide bushing assembly for flask, patterns, and the like. 3,776,299, Cl. 164-385.000.
Ryan, William J.: *See*—
Peters, Allen; and Ryan, William J., 3,776,498.
Ryason, Porter R., to Chevron Research Company. Method and apparatus for producing radiation. 3,777,208, Cl. 313-231.000.
Rydlewicz, Alexander H.: *See*—
Kulig, Constantine W.; and Rydlewicz, Alexander H., 3,776,342.
Ryffel, Henry H.: *See*—
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Ryn, Edwin Van; and Driesenga, Edwin J., to Keeler Brass Company. Method of assembling a drawer pull. 3,775,830, Cl. 29-434.000.
Rys, Tadeusz J., to Square D Company. Safety switch with scalable cover and interlock means for preventing operation of sealing means when cover is fully open. 3,777,084, Cl. 200-50.00a.
Rzyankin, Alexandr Ivanovich: *See*—
Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich, 3,776,833.
Saab-Scania Aktiebolag: *See*—
Gadefelt, Bengt Georg, 3,775,971.
Sabet, Huschang. Exhaust arrangement in a rotary-piston internal combustion engine. 3,776,201, Cl. 123-13.000.
Sabranski, Udo; Weber, Theodor; and Werner, Wolfram, to Rheinmetall G.m.b.H. Device for cutting steel ropes, hawsers, chains, cables and the like under the water surface. 3,776,165, Cl. 114-221.00a.
Saffron, Ronald George, to Hayssen Manufacturing Company, mesne. Extruder movement. 3,776,680, Cl. 425-326.000.
Sagawa, Takao; Hirano, Seiji; Tanaka, Nobuhiko; and Togashi, Kunihiko, to Chugai Saiyaku Kabushiki Kaisha. Macrotetrolide miticide and insecticide. 3,777,023, Cl. 424-200.000.
Saika, Daini: *See*—
Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, 3,776,956.
Salem, Hassan Raddy Ardel, to Universal Telewriters (Pty) Limited. Information display device. 3,775,881, Cl. 40-28.00c.
Samuels, Peter B.: *See*—
Wood, Ernest C.; and Samuels, Peter B., 3,775,825.
Sandblad, Krister: *See*—
Olbrant, Goran; Citron, Bengt; Rosby, Sven-Olof; and Sandblad, Krister, 3,775,806.
Sandblom, Henry; and Torok, Vilmos, to Allmanna Svenska Elektriska Aktiebolaget. Control means for grinding machines. 3,776,476, Cl. 241-34.000.
Sanders, Frederick W., to Mead Corporation, The. Non-cockling conductive ink. 3,776,742, Cl. 106-22.000.
Sanderson, Edward. Sheet metal joint. 3,776,652, Cl. 403-282.000.
Sandin, Nels T. Reverse image pantographic apparatus. 3,775,852, Cl. 33-23.00e.
Sandoz-Wander, Inc.: *See*—
Anderson, Paul L., 3,777,026.
Sanford Research Company: *See*—
De Groft, Walter J., 3,776,673.
Sansone, Eugene A., to Singer Company, The. Photoelectric detectors for bobbin of a weaving loom. 3,777,168, Cl. 250-561.000.
Sansui Electric Co., Ltd.: *See*—
Takahashi, Susumu, 3,777,076.
Saslawsky, Sheldon, to Textron, Inc. Blow molding apparatus. 3,776,678, Cl. 425-310.000.
Sasse, Klaus; and Eue, Ludwig, to Bayer Aktiengesellschaft. 2-Acylamino-1,3,4-thiadiazole-(thi)-one (5) compounds and herbicidal compositions. 3,776,919, Cl. 260-306.80d.
Sato, Akira; Ikeda, Tadashi; Nakazawa, Yoshiyuki; Nakamura, Yashuharu; and Takei, Haruo, to Fuji Photo Film Co., Ltd. Spectrally sensitized silver halide photographic emulsion. 3,776,739, Cl. 96-137.000.
Sato, Isao: *See*—
Kamogawa, Toshiro; Okino, Yoshihiro; Sato, Isao; and Okuno, Noboru, 3,777,060.
Sauterel, Gerard, to Matisa Materiel Industriel S.A. Method and apparatus for measuring the inclination of a railway track. 3,775,859, Cl. 33-338.000.
Savin Business Machines Corporation: *See*—
Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., 3,776,632.
Sawbie, Hewlett. Accumulating conveyor. 3,776,347, Cl. 198-127.00r.
Say, Donald L., to GTE Sylvania Incorporated. High resolution cathode ray tube shadow-mask. 3,777,202, Cl. 313-85.00s.
Scalf, Charles E.: *See*—
Fall, Herbert S.; Fall, Martin K.; Fall, Maxwell S.; Scalf, Charles E.; Lambert, Ronald D.; and York, William D., 3,776,608.
Scardiglia, Frank; Dissen, Israel J.; and Hokama, Takeo, to Velsicol Chemical Corporation. Polyesters of methylcylohexendicarboxylic anhydride. 3,776,980, Cl. 260-872.000.
Scarpetti, Julius J.: *See*—
McCann, John J.; and Scarpetti, Julius J., 3,776,725.
Schaar, Charles H., to Colgate-Palmolive Company, mesne. Diaper with thigh-opening closure means. 3,776,232, Cl. 128-287.000.
Schaar, Charles H., to Colgate-Palmolive Company, mesne. Edge contourable diaper. 3,776,233, Cl. 128-287.000.
Schaefer, Edward J.; and Refice, Alfred F., to Franklin Electric Co., Inc. Submersible motor with protective end bells. 3,777,194, Cl. 310-87.000.
Schaff, Alfred: *See*—
Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, 3,776,766.
Schaffner, Carl P.: *See*—
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Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., to Skill Sports, Inc. Resilient resin foam polyhedron and bat. 3,776,551, Cl. 273-95.00a.
Scheffler, Knut; Muller, Henricus M.; and Cappel, Aldo, to Alkem Alpha-Chemie und-Metallurgie G.m.b.H. Process for the wet chemical combustion of organic material. 3,776,856, Cl. 252-301.10v.
Scheitlin, George E.; and Bentley, David Ray, to Arvin Industries, Inc. Exhaust gas manifold. 3,775,979, Cl. 60-322.000.
Schenck, Leslie M.: *See*—
Nehmsmann, Louis J.; and Schenck, Leslie M., 3,776,985.
Scherenberg, Hans, to Daimler-Benz Aktiengesellschaft. Installation for the prevention of slipping of the drive wheel of motor vehicles. 3,776,355, Cl. 180-77.00r.
Scherg, Gustav; Auer, Norbert; Obereder, Horst; and Stollmayer, Nikolaus, to Vereinigte Osterreichische Eisin- und Stahlwerke Ak-

tiengesellschaft. Arrangement for forcing two abutments apart. 3,776,063, Cl. 74-520.000.

Schering Corporation: *See—*
Mann, Thomas A.; and Villani, Frank J., 3,776,917.

Schiavone, Donald J., to Gould Inc. Elastomeric spacer and/or damper for electrical conductors. 3,777,046, Cl. 174-42.000.

Schick Incorporated: *See—*
Waters, Robert S.; Doyle, Edward J.; Rogers, Meyric K.; and Bartram, Nail C., 3,775,861.

Schieven, Stanley R.: *See—*
Frost, David A.; and Schieven, Stanley R., 3,776,732.

Schindler, Harvey P.: *See—*
Riegel, Herbert; Schindler, Harvey P.; Sze, Margan C.; and Brooks, Maurice E., 3,776,967.

Schindler, Herbert; and Winter, Gerhard. Machine for pre-shaping shoe parts. 3,775,796, Cl. 12-54.300.

Schindler, Walter: *See—*
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Schirmer, Olaf W.: *See—*
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Schjeldahl, G. T., Company: *See—*
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Schlaepfer, Hans: *See—*
Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, 3,776,905.

Schlage, Ernest L., to Schlage Lock Company. Removable cylinder for a lockset. 3,776,008, Cl. 70-368.000.

Schlage Lock Company: *See—*
Schlage, Ernest L., 3,776,008.

Schlatter, Gerald Lance, to International Telephone and Telegraph Corporation. Densitometer components. 3,776,024, Cl. 73-32.000.

Schlegel Manufacturing Company, The: *See—*
Weaver, John L.; and Smoot, Edward H., 3,775,907.

Schlosser, Klaus, to Siemens Aktiengesellschaft. Pressurized gas insulated switching installation. 3,777,083, Cl. 200-48.00r.

Schlueter, David F.; and Morgan, JOhn Edward, to Illinois Tool Works Inc. Container and carrier assembling machine. 3,775,935, Cl. 53-48.000.

Schmackpfeffer, Arno: *See—*
Frosch, Albert; and Schmackpfeffer, Arno, 3,776,633.

Schmid, Julius, Inc.: *See—*
Gordon, Harry W.; and Schaffner, Carl P., 3,777,018.

Schmidt, Henry. Tile setting template. 3,775,856, Cl. 33-180.00r.

Schmiel, Herbert H., to Parker-Hannifin Corporation. Directional control valve. 3,776,273, Cl. 137-596.120.

Schmitt, George P.: *See—*
Levy, M. Frank; and Schmitt, George P., 3,776,729.

Schneble, Edwin: *See—*
Klopfer, Emil; Stelzle, Martin; and Schneble, Edwin, 3,776,327.

Schneider, Gerold: *See—*
Papst, Georg; Wrobel, Gunter; and Schneider, Gerold, 3,777,191.

Schneider, Herbert Anton, to Bell Telephone Laboratories, Incorporated. Minimization and limiting of power dissipation in multivibrators and the like. 3,777,185, Cl. 307-291.000.

Schneider, Wolfgang, to Goodrich, B. F., Company, The. Catalytic isomerization process for the production of 5-ethylidenebicyclo(2.2.1) hept-2-enes. 3,776,966, Cl. 260-666.0py.

Schneiter, Ali: *See—*
Besson, Rene; Schneiter, Ali; and Meister, Rene, 3,775,965.

Schneller, Joseph W., to National Gypsum Company. Laminated gypsum partition. 3,775,920, Cl. 52-241.000.

Scholl, Hans, to Koch Adler AG. Method for producing patch pockets on articles of clothing. 3,776,162, Cl. 112-262.000.

Schornhorst, James R.: *See—*
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Schrack, Frank C.; and Lee, Arthur. Automatic/manual lubrication system for power tools. 3,776,369, Cl. 184-15.00r.

Schreyer, Gerd: *See—*
Kleeman, Axel; Schreyer, Gerd; Weiberg, Otto; and Weigert, Wolfgang, 3,776,948.

Schreyer, Ralph C., to De Pont de Nemours, E. I., and Company. Polyesters from 1,4-dialkyl-1,4-cyclohexane-dicarboxylic acid and organic diols. 3,776,886, Cl. 260-47.00c.

Schrueder, Thomas: *See—*
Choufoer, Johannes H.; Van Kerkvoort, Willem J.; Van der Meij, Pieter H.; and Schrueder, Thomas, 3,776,247.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
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Schuetz, Hans Ulrich: *See—*
Buehler, Arthur; Schuetz, Hans Ulrich; Maeusezahl, Dieter; Harris, Melvin; and Guth, Christian, 3,776,767.

Schultz, Richard V., to United States of America, Navy. Directional phase-shifting coupler. 3,777,284, Cl. 333-10.000.

Schumacher, Alfred: *See—*
Artz, Gerd; Schumacher, Alfred; Marzinkewitsch, Rene; Hirschfelder, Horst-Dieter; and Vortkamp, Klaus, 3,776,014.

Schwartz, Robert B., to Fruehauf Corporation. Trailer construction. 3,776,400, Cl. 214-38.0ba.

SCM Corporation: *See—*
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Scott & Fetzer Company, The: *See—*
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Scott Paper Company: *See—*
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Sears, Roebuck and Co.: *See—*
Carver, William M., Jr., 3,775,812.

Seckerson, Clifford A., to TRW Inc. Fastener. 3,776,092, Cl. 85-5.00r.

Seeburg Corporation of Delaware, The. *See—*
Johnson, Kurt Theodore, 3,776,338.

Segerstad, Carl Gustaf Hard AF. Device in V-belt transmissions. 3,776,053, Cl. 74-230.17e.

Seitz, Joseph A.: *See—*
Henderson, Donald W.; and Henderson, Shirley W., 3,776,574.

Selectivend, Inc., mesne: *See—*
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Self Energising Disc Brakes Limited: *See—*
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Selivanov, Gennady Dmitrievich: *See—*
Fedosenko, Igor Grigorievich; Kononenko, Vadim Grigorievich; Morgolenko, Anatoly Sergeevich; and Selivanov, Gennady Dmitrievich, 3,776,020.

Semler, Herbert J. Portable self-contained electrical cardiometric device with three fixed-position nonuniformly spaced input probes. 3,776,228, Cl. 128-2.06r.

Senft, Stephen P.; and Sterling, Vaughn C., to General Electric Company. Flashlamp primer precoating. 3,776,685, Cl. 431-93.000.

Seri, Tsutomu; and Abe, Shinogu, to Matsushita Electric Industrial Co., Ltd. Voltage regulator for DC power source. 3,777,239, Cl. 318-345.000.

Serino, Yoichi: *See—*
Niimi, Itaru; Hashimoto, Kametaro; Ushitani, Kenzi; Ishihara, Ko; Serino, Yoichi; Mitani, Seishu; and Imanishi, Kunizo, 3,776,705.

Serko, Richard A. Raised stop for ski boot of the pivoted ankle cuff type. 3,775,871, Cl. 36-2.5al.

Service d'Exploitation Industrielle des Tabaco et des Allumettes: *See—*
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Service d'Exploitation Industrielle des Tabacs et des Allumettes: *See—*
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Setler, Karl: *See—*
Baumler, Peter; Hofer, Gerhard; Korner, Tassilo; Mohn, Heinrich; Setler, Karl; Summat, Fritz; and Rau, Karlheinz, 3,776,809.

Settle, Joseph F., to General Electric Company. Fail-safe liquid pumping and flow control system. 3,776,439, Cl. 266-38.000.

Sevcik, Zdenek; and Jankovsky, Josef, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Method of and apparatus for metering and storing weft yarn for intermittent insertion into the shed of shuttleless looms. 3,776,282, Cl. 139-122.000.

Seymour, Samuel L., to PPG Industries, Inc. Controlling the shape of a sheet of glass during cooling. 3,776,708, Cl. 65-114.000.

Shah, Jashwant J., to Bigelow-Sanford, Inc. Composite false-twist yarns, method and apparatus. 3,775,955, Cl. 57-34.0at.

Shakley, Conrad Dale: *See—*
Goffredo, Daniel L.; and Shakley, Conrad Dale, 3,776,800.

Shank, Louis Marcel: *See—*
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Sharps Associates: *See—*
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Shavel, John, Jr.: *See—*
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Shaw, Clarence W., to McDermott, Ray J., & Co., Inc. Apparatus for laying submarine pipelines. 3,775,985, Cl. 601-72.100.

Shaw, Clifford D. Front axle beam press. 3,776,019, Cl. 72-404.000.

Sheka, Vladimir Pavlovich; Kolesnikov, Valery Afanasievich; Kuzmin, Valery Vyacheslavovich; Muzhzhavlev, Konstantin Dmitrievich; Donskikh, Petr Alexandrovich; Chistyakov, Evgeny Georgievich; and Rzyankin, Alexandr Ivanovich. Magnesium electrolyzer. 3,776,83, Cl. 204-243.00r.

Shekhter, Semen Yakovlevich: *See—*
Nautny, Konstantin Trofimovich; Lakomsky, Viktor Iosifovich; Chvertko, Anatoly Ivanovich; Zherdev, Anatoly Vasilievich; Voropaev, Alexandr Petrovich; Pilipchuk, Viktor Romanovich; Shekhter, Semen Yakovlevich; Reznitsky, Alexandr Mikhailovich; Tsipura, Leond Nikolaevich; and Zabarilo, Oleg Semenovich, 3,777,044.

Sheldon, Robert; and Strauss, Bruce P., to United States of America, Atomic Energy Commission. Method for centering and restraining coils in an electromagnet. 3,775,842, Cl. 29-606.000.

Shell Oil Company: *See—*
Boor, John, Jr., 3,776,862.
Borsboom, Albertus C. H., 3,777,122.
Chant, Peter R., 3,776,702.
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Gautier, Pieter A.; Van der Plas, Franciscus J. F.; and Verbrugge, Pieter A., 3,776,974.
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Pearson, James W.; Price, Gareth G.; and Earps, Hugh B., 3,776,847.
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Shen, Shih C.: *See—*
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Shepard, David. Method for etch resist coating of plated holes in printed circuit boards. 3,776,771, Cl. 117-212.000.

Shepherd, John B. Sign board or poster holder. 3,775,885, Cl. 40-124.100.

Shepherd, Richard, to Decca Limited. Detecting systems. 3,777,167, Cl. 250-560.000.

Sherwin, Amos G.: *See—*
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Sherwin-Williams Company, The: *See—*
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Cunningham, Arthur L.; and Mathai, John, 3,776,868.
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Sherwood Medical Industries Inc.: *See—*
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Shibatani, Kyoichiro; and Nagata, Shiro, to Kuraray Co., Ltd. Process for the production of propylene oxide polymers. 3,776,863, Cl. 260-2.00a.

Shichman, Daniel; Miller, Henry F.; and Ren, Mann, to Uniroyal, Inc. Power transmission belts. 3,776,054, Cl. 74-233.000.

Shimada, Katsutoshi: *See—*
Inai, Yuichi; Okazaki, Kanzo; Shimada, Katsutoshi; Kagei, Kengo; and Bessho, Motoaki, 3,776,946.

Shimamura, Isao: *See—*
Iwano, Harohiko; Hayashi, Katsumi; Iijima, Yoo; and Shimamura, Isao, 3,776,731.

Shimizu, Giichi: *See—*
Shimizu, Giichi; and Takahashi, Teiji (said Takahashi assor. to said), 3,776,567.

Shimizu, Giichi; and Takahashi, Teiji, said Takahashi assor. to said Shimizu, Giichi. Heel piece. 3,776,567, Cl. 280-11.35t.

Shimizu, Noboro; Yoshida, Sadao; Kubota, Kunihiro; Kobayashi, Daizo; and Ohara, Takashi, to Nippon Shokubai Kogaku Kogyo Co., Ltd. Continuous esterification process. 3,776,947, Cl. 260-486.00r.

Shimoda, Mitsuhiko: *See—*
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Shoei Chemical Industries Co., Ltd.: *See—*
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Shumaker, Charles Storer, to Wean United, Inc. Coil centering device. 3,776,484, Cl. 242-78.600.

Si Lite, Incorporated: *See—*
Wiley, Robert L., 3,776,504.

Sibthorpe, Anthony M. Vessel having a control fin, for example, a keel or rudder, and mechanism for use therein. 3,776,171, Cl. 114-141.000.

Siebert, Milan J.: *See—*
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Sielmakh, Viktor Alexeevich: *See—*
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Sigma Instruments, Inc.: *See—*
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Sikora, Helga: *See—*
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Silco, Inc.: *See—*
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Silva, Frank A., to Amerace Esna Corporation. Shielding tape grounding device for high voltage cables. 3,777,050, Cl. 174-78.000.

Silver, Jack. Gas turbine engine. 3,775,974, Cl. 60-39.340.

Silver Top Manufacturing Company, Inc.: *See—*
Struben, Francis L., 3,775,917.

Silvertz, Christian; and Soltys, Joseph F. Electroless silvering composition and method. 3,776,740, Cl. 106-1.000.

Simko, Aladar O., to Ford Motor Company. Engine constant rate exhaust gas recirculation system. 3,776,207, Cl. 123-119.00a.

Simmons, Carl Edward, to United Aircraft Products, Inc. Heat transfer system. 3,776,305, Cl. 165-107.000.

Simmons, Marion I.: *See—*
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Simon, Joseph P.: *See—*
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Simon, Martin J., to PPG Industries, Inc. Additive for acrylic lacquers. 3,776,878, Cl. 260-32.200.

Simonovitch, Chaim: *See—*
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Just, George E.; and Simonovitch, Chaim, 3,776,941.

Simpson, Arthur G.: *See—*
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Simpson, Edgar Alan, to Grace, W. R., & Co. Automotive exhaust conversion catalyst. 3,776,859, Cl. 252-462.000.

Singer Company, The: *See—*
Dobner, Richard G.; and Hebert, Donald G., 3,776,341.
Sansone, Eugene A., 3,777,168.

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Papajewski, Reinhold; and Kleinschmidt, Johann O., 3,776,161.

Singhal, Gopal H.; and Turkos, Robert E., to Esso Research and Engineering Company. Thiocarbamic acid ester pesticides. 3,776,936, Cl. 260-455.00a.

Singhal, Gophal H.; and Lesser, Joseph H., to Esso Research and Engineering Company. Hydantoin acyl halides and their use as insecticides. 3,776,921, Cl. 260-309.500.

Sirola, Frank. Tool holder with cutter clamping means. 3,775,818, Cl. 29-96.000.

Sironi, Giuseppe: *See—*
Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, 3,777,013.

Sirota, Julius, to National Starch and Chemical Corporation. Urethane adhesives comprising a blend of a castor oil based isocyanate prepolymer with a terpene phenolic resin. 3,776,869, Cl. 260-24.000.

Skill Sports, Inc.: *See—*
Schaller, Joseph P.; Jorgensen, E. Chris; and Critelli, Louis J., Jr., 3,776,551.

Skinner, Dale D.; Thompson, John H.; and Whittaker, Robert H., to Westinghouse Electric Corporation. Acoustic energy transmission device. 3,777,189, Cl. 310-8.300.

Slemmons, Arthur J. Air foil with vortex generators. 3,776,170, Cl. 114-103.000.

Slingsby, Thomas W.; Neville, Hugh C.; and Heise, Karl A., to Richmond Graphic Systems, Inc. Diffusion transfer printing plate processor. 3,776,119, Cl. 95-89.00a.

Slyvakov, Vladimir Egorovich. Device for cutting braided chemical fibers. 3,776,084, Cl. 83-342.000.

Small, Donald I. Disposable plastic slipper. 3,775,873, Cl. 36-11.500.

Smerz, Otto; Linke, Werner; Schaff, Alfred; and Hess, Peter, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for improving the processing properties of polyester filaments and fibres. 3,776,766, Cl. 117-138.80f.

Smiddy, Joseph F., 1/4 to Lorusso, Anthony M. Fiber optic entubator and method of entubation of the trachea through the nasopharynx. 3,776,222, Cl. 128-6.000.

Smidth, F. L., & Co.: *See—*
Hansen, Claus M.; and Norgaard, Ejvind N., 3,776,477.

Smith, A. O., Corporation: *See—*
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Smith, Bruce E.: *See—*
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Smith, Carl A.: *See—*
Visos, Charles D.; Love, John J.; and Smith, Carl A., 3,776,268.

Smith, Charles A., Jr. Neckpiece. 3,775,776, Cl. 2-149.000.

Smith, Charles C.: *See—*
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Smith, Grant N.; and Taylor, Yvonne S., to Dow Chemical Company, The. Dry cleaning composition and process. 3,776,693, Cl. 8-142.000.

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Smith, Ian E.; Hastwell, Peter J.; and Vermeulen, Marinus C., to Savin Business Machines Corporation. Cleaning mechanism for photoconductive surfaces. 3,776,632, Cl. 355-15.000.

Smith, Irving. Self-erecting display box. 3,775,884, Cl. 40-124.100.

Smith, Jag G., Jr.; Michal, David H.; Cartee, Thomas E.; and Rothrock, Burton J., to Reynolds, R. J., Tobacco Company. Expandable collar. 3,775,810, Cl. 24-30.50s.

Smith, James A. Stabilized pulse generator with variable output. 3,777,184, Cl. 307-260.000.

Smith, James D. B.: *See—*
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Smith, Leif H.: *See—*
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Smith, Lewis W., to Purity Packaging Limited. Method of and apparatus for applying caps to containers. 3,775,934, Cl. 53-38.000.

Smith, Robert P.: *See—*
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Smith, Victor P.; and Smith, Charles C., to Tappan Company, The. Loader for power presses. 3,776,537, Cl. 269-13.000.
Smith, William R., to Cincinnati Milacron Inc. Pallet. 3,776,435, Cl. 222-566.000.
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Smoot, Edward H.: *See—*
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Smrekar, Clarence E.; and Goetter, Erwin H., to Preformed Line Products Co. Appliance for linear bodies. 3,775,811, Cl. 24-122.600.
Smulka, Thomas Gordon, to Gertsch AG. Safety ski binding. 3,776,566, Cl. 280-11.35m.
Snam Progetti S.p.A. L.R.S.R.-Brevetti: *See—*
Corno, Silvio, 3,776,813.
Sobajima, Katsonobu; and Matsuzaki, Kiyoto, to Nissan Motor Company, Limited. Safety arrangement for vehicle body closure structures. 3,776,588, Cl. 296-146.000.
Societa Italiana Resine S.p.A.: *See—*
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Societe Anonyme Automobiles Citroen: *See—*
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Societe Civile d'Etudes de Centrifugation: *See—*
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Soverini, Arrigo; Sironi, Giuseppe; and Arezzi, Raffaele, to Montecatini Edison S.p.A. Process for the preparation of synthetic rutile starting from ilmenite. 3,777,013, Cl. 423-610.000.
Spadini, Paolo. Watch with adjustable time-dependent signal transmission. 3,775,967, Cl. 58-57.500.
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Spidell, William H.; and Wilson, Billy F., to Dresser Industries, Inc. System for operating an electrical device and a selectively fired perforator utilizing a common transmission channel. 3,776,323, Cl. 175-4.510.
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St. Regis Paper Company: *See—*
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Stacey, Gilbert Joseph, to Imperial Chemical Industries Limited. 2-Amino-5-oxo-5,6-dihydro-s-triazolo [1,5-c]pyrimidines. 3,776,911, Cl. 260-256.40f.
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Ko, Daniel Y. C.; and Stahlfeld, Donald L., 3,776,836.
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Stalioraitis, Joseph S.; and Wilhelmy, Charles S., to Akzona Incorporated. Preparation of amine oxides in non-polar solvent systems. 3,776,959, Cl. 260-583.00d.
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Standard Products Company, The: *See—*
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Stanley, William L.: *See—*
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Starr, Carrol Dean; and Wang, Teh Po, to Driver, Wilbur B., Co. Thermocouple with nickel-silicon-magnesium alloy negative element. 3,776,781, Cl. 136-239.000.
Stauffer Chemical Company: *See—*
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Steinberg, Morris; and Libow, Mitchell, said Libow assor. to said Steinberg, Morris. Guillotine chopper arrangement. 3,776,079, Cl. 83-225.000.
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Stevenson, Elbert H., 50% interest to Rehm, Frederick H. Method of joining the ends of multi-layer printing forms. 3,776,795, Cl. 156-157.000.
Stewart, John Kenneth, to Camon Inc. Self-propelled tie destroying machine. 3,776,153, Cl. 110-10.000.
Stewart, William R., Jr.: *See—*
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Strecker, William V., to Peck & Hale, Inc. Container stowing system. 3,776,169, Cl. 114-72.000.

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Suzuki, Toshio; Awano, Koichi; and Ogino, Katsuhisa. Method for modifying the surface of a polyolefin film. 3,777,002, Cl. 264-343.000.

Svensson, Jan Axel. Apparatus for drawing liquid such as blood. 3,776,218, Cl. 128-2.00f.

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Takagi, Kiyoshi; Kawamura, Susumu; and Fujii, Hiroshi, to Nippon Electric Glass Company, Limited. Method for sealing glass, metal or ceramics with mixture of PbO Glass and β-eucryptite containing glass. 3,776,764, Cl. 117-124.00a.

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Tanaka, Nobuhiko: *See—*
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Tatusku, Philip A.; and Williams, Richard A., to International Business Machines Corporation. Multi-layer circuit package. 3,777,221, Cl. 317-101.0cp.

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Tenchi Kikai Kabushiki Kaisha: *See—*
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Theissen, Robert J., to Mobil Oil Corporation. 2-Substituted 4-nitrophenyl halophenyl ethers. 3,776,961, Cl. 260-613.00r.
Thelemaque, Louis Emanuel: *See—*
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Thompson, Jerome B. Baking process and compositions for its practice. 3,777,038, Cl. 426-19.000.
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Tice, Joseph. Guide rail support. 3,776,350, Cl. 198-204.000.
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Strimel, Robert S., 3,776,030.
Tinkle, Marvin C., to United States of America, Atomic Energy Commission. Cryochemical method for forming spherical metal oxide particles from metal salt solutions. 3,776,988, Cl. 264-14.000.
Tinnerman, George A. Fastening means for a rotational fastener and method. 3,775,790, Cl. 10-86.00f.
Titoff, Victor. Device for simultaneously displaying the front and rear of coins. 3,776,643, Cl. 356-244.000.
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Toporcer, Louis H.; and Clark, Joseph N., to Dow Corning Corporation. Methylvinyldi-(-N-methylacetamido) silane. 3,776,934, Cl. 260-448.20n.
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Trap, Hendrikus Johan Lodewijk, to U.S. Philips Corporation. Lithium-borovanadate glass for use in a secondary electrode. 3,776,745, Cl. 106-47.00r.
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Travis, Allen Edwin, to AMP Incorporated. Electrical contact terminal having closed entry receptacle and connector. 3,777,302, Cl. 339-223.00r.

Treichler, Hans-Joerg; and Riehen, Jakob Nuesch, to Ciba-Geigy Corporation. Process for the manufacture of cephalosporin C. 3,776,815, Cl. 195-36.00r.

Trepka, William J.; and Sonnenfeld, Richard J., to Phillips Petroleum Company. Organolithium polymerization initiators. 3,776,896, Cl. 260-94.20m.

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Tribuno, Robert F.; Foster, Thomas E.; Mineck, David W.; and Hattendorf, Edwin R., to Collins Radio Company. Turn coordination control with dead space and limited washout. 3,777,242, Cl. 318-586.000.

Trigg, Jack Victor Haig, to International Engineering Concessionaires Limited. Tensile member with tension indicator. 3,776,031, Cl. 73-95.000.

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Triplett, Frank Lewis. Spray applicator. 3,776,226, Cl. 128-172.000.

Triplex Safety Glass Company Limited: *See—*
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Truhan, Andrew. Controlled environmental apparatus for industry. 3,776,121, Cl. 98-33.00r.

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Van Schoyck, Quentin, to Cylpik Incorporation. Method and apparatus for facilitating the harvesting of fruit from fruit trees. 3,775,954, Cl. 56-329.000.
Van Steenbergen, Teunis Willem; and De Waal, Jan Arie Gerrit, to U.S. Philips Corporation. Schottky junction in a cavity. 3,777,228, Cl. 317-235.00r.
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Varian Associates: *See—*
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Vater, Wulf: *See—*
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VCA Corporation: *See—*
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Veeneman, John L.; Thomas, Marion L.; and Deveraux, Harry R., to American Potato Company. Automatic deep fat fryer. 3,776,126, Cl. 99-404.000.
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Veloso, Alberto E., to International Erfinder- und Patentanstalt. Process for extracting metal plating, scrap or ore in a fused electrolyte cell. 3,777,011, Cl. 423-592.000.
Veloso, Alberto E., to International Erfinder- und Patentanstalt. Process for extracting metal from metal plating, scrap or ore in a fused electrolyte cell. 3,777,012, Cl. 423-610.000.
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Veneziani, Marco Antonio. Rotary brush. 3,775,800, Cl. 15-28.000.
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Verbrugge, Pieter A.: *See—*
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Vierling, Oskar; and Wieland, Hansjurgen, said Wieland assor. to said Vierling, Oskar. Method for measuring the frequency-dependent attenuation of a telecommunications line, especially a two-wire line. 3,777,081, Cl. 179-175.300.
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Vit, Jaroslav, to National Patent Development Corporation. Electrolytic treatment. 3,776,825, Cl. 204-81.000.

Vlnaty, Joseph, to Dravo Corporation. Apparatus for continuous heat processing of ore pellets. 3,776,533, Cl. 266-24.000.

Vogel, Charles B., to Shell Oil Company. Method and apparatus for detecting an inflow of fluid into a well. 3,776,032, Cl. 73-155.000.

Vogel, Christian: *See—*
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Walker, Kurt. Dispenser for a moist flexible sheet material. 3,775,801, Cl. 15-104.930.

Walls, John H., to Stang Hydronics Inc. Horizontal-axis vehicle gate incorporating locking mechanism. 3,775,912, Cl. 49-131.000.

Walter, William H.; and Mesnik, Robert F., to Emhart Corporation. Method and means for detecting foreign particles in liquid filled containers. 3,777,169, Cl. 250-565.000.

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Watanabe, Nobuatsu; Kusuno, Hidcaki; and Ishida, Yutaka, to Nippon Paint Co., Ltd. and Nippon Carbon Co., Ltd. Dry film lubricant consisting of synthetic resin, fluorinated graphite, and solid lubricants such as molybdenum disulfide, graphite, and polytetrfluoroethylene. 3,776,845, Cl. 252-12.000.

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Watkins, Ernest R., Jr.; and Browne, David W. Method of forming solid structures from a continuously supplied liquid. 3,776,990, Cl. 264-54.000.

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Williams, Delmas D. Apparatus for opening tobacco curing sticks. 3,776,392, Cl. 214-1.00r.

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Winster Hose, Limited: *See—*
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Witzler, Franz; and Koepp, Hans-Martin, to Glanzstoff AG. Stability of fiber-forming polyesters. 3,776,882, Cl. 260-45.90r.

Wochnowski, Waldemar, to Hauni-Werke Kurber & Co. Method and arrangement for measuring the quantity of moisture in smoking goods. 3,777,258, Cl. 324-612.00s.

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Womer, Walter D., to Phillips Fibers Corporation. Yarn process. 3,775,961, Cl. 57-157.00s.

Wood, Ernest C.; and Samuels, Peter B., 1/5 to Levaux, Rene G. Clip applicator. 3,775,825, Cl. 29-212.00d.

Wood, Herbert Leslie, to Imperial Chemical Industries Limited. Granular propellant containing KNO_3 and unsaturated ester. 3,776,787, Cl. 149-7.000.

Wood, Richard A. Apparatus for sorting products. 3,776,381, Cl. 209-111.600.

Woods, Richard E.; and Hohman, William H., to Franklin Electric Co., Inc. Motor start winding switch controlled by phase of main winding current. 3,777,232, Cl. 318-221.00c.

Woodson, Edgar F. Obstetrical instrument. 3,776,240, Cl. 128-361.000.

Worland, Donovan, to Landor, Walter, Associates, mesne. Optical display system and method for creating a theatrical illusion. 3,776,621, Cl. 352-85.000.

Wormald, Colin Norman: *See—*
Beck, Maurice Sidney; Musgrave, Gerald; and Wormald, Colin Norman, 3,777,133.

Wright, Edward S.; Angstadt, John W.; and Krolopp, Otto C., to Blaw-Knox Food and Chemical Equipment, Inc. Adjustable tensioning device for circular screens. 3,776,382, Cl. 209-403.000.

Wright, James A., to Emerson Electric Co. Ignition and control system for gas burners. 3,776,684, Cl. 431-66.000.

Wrobel, Gunter: *See—*
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WSF Industries, Inc.: *See—*
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Wu, Yu-Lin, to Phillips Petroleum Company. Solid state conversion of metal oxide to the corresponding metal carboxylate. 3,776,930, Cl. 260-429.900.

Wurm, Jaroslav, to Institute of Gas Technology, The. Pressure translating apparatus and process. 3,775,970, Cl. 60-6.000.

Wykes, Robert E.: *See—*
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Wyomissing Corporation: *See—*
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Yagi, Hitoshi: *See—*
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Yakubek, Louis P.; and Obenshain, George R., to Owens-Illinois, Inc. Glass making machinery. 3,776,348, Cl. 198-131.000.

Yamada, Junichi; Terashima, Etuzo; Takami, Yasuji; Fukuda, Kenji; and Nakai, Hiromitu, to Hitachi, Ltd. Color picture tube shadow mask of low carbon soft steel. 3,777,203, Cl. 313-85.00s.

Yamaguchi, Masaya; and Hironaka, Nobuyuki, to Nippon Kokan Kabushiki Kaisha. Means for preventing deformation of steel tubes. 3,776,253, Cl. 138-109.000.

Yamakawa, Yukio: *See—*
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Yamane, Izumi; Saika, Daini; and Tomidokoro, Susumu, to Lion Fat & Oil Co., Ltd. Resinous composition. 3,776,956, Cl. 260-561.00n.

Yamanoto, Hisao: *See—*
Atsumi, Toshio; Kobayashi, Kenji; Takebayashi, Yoshiaki; and Yamanoto, Hisao, 3,776,914.

Yeager, Harold Everett; Krage, Richard F.; and Wilhite, Benjamin Melvin. Hydrotherapy bath with wave energy producing mechanism. 3,776,223, Cl. 128-66.000.

Yearsley, Gerald A.: *See—*
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Yeh, Rudolph E., to International Harvester Company. Cushion device. 3,776,100, Cl. 91-409.000.

Yeomans, Bertram: *See—*
Failey, Harry; and Yeomans, Bertram, 3,776,951.

Yeske, Louis A., to Arrow-Hart, Inc. Lever Operated switch. 3,777,087, Cl. 200-67.00a.

Yeske, Louis A., to Arrow-Hart, Inc. Trigger operated actuating mechanism for an electric switch with integrally molded fulcrum and snap-on connecting means associated with the trigger. 3,777,092, Cl. 200-172.00r.

Yohn, Melvin G.; and Simon, Joseph P., to Ecodyne Corporation, mesne. Welding gun. 3,777,110, Cl. 219-125.00r.

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Yoshioka, Yoshihide; Kobayashi, Shigekazu; and Mizobe, Akio, to Kuraray Co., Ltd. Method of manufacturing polyvinyl alcohol fiber of improved property. 3,776,994, Cl. 264-170.000.

Yoshioka, Yoshitomo. Device for recovering cooking oil separately from the heating furnace of a deep fryer. 3,776,125, Cl. 99-403.000.

Yoshizawa, Junji: *See—*
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Yoshizawa, Katuyuki, to Nisson Motor Company, Limited. Dry-disc friction clutch. 3,776,337, Cl. 192-110.00b.

Yoshizawa, Michi: *See—*
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Young, Alan M.; and Webb, Edwin Y., to Dicom Industries. Tape apparatus. 3,776,488, Cl. 242-183.000.

Young, Bill M.: *See—*
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Young, Fred M., to Young Radiator Company. Reinforced sectional radiator. 3,776,301, Cl. 165-67.000.

Young, Frederick J.; and Elco, Richard A., to Westinghouse Electric Corporation. Position sensor utilizing a primary and secondary shielded from one another by a ferromagnetic shield and a magnet whose position relative to the shield changes the shielding. 3,777,255, Cl. 324-34.0ps.

Young, James Douglas, to Gearhart-Owen Industries, Inc. Apparatus for setting a large bore packer in a well. 3,776,307, Cl. 166-125.000.

Young, Leslie: *See—*
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Young, Robert S.: *See—*
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Youngstown Steel Door Company, The: *See—*
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Zaffaroni, Alejandro, to Alza Corporation. Device for suppressing fertility. 3,777,015, Cl. 424-15.000.

Zebree, David I., to Hercules Incorporated. Non-electric blasting cap assembly. 3,776,135, Cl. 102-29.000.

Zechini, Antonio. Sewing machine, in particular for making the edge on the type of shoes commonly known as mocassins. 3,776,158, Cl. 112-216.000.

Zellmer, Neale A., to GTE Automatic Electric Laboratories Incorporated. Battery charging circuit for subscriber carrier equipment. 3,777,247, Cl. 320-2.000.

Zenhausern, Heinrich. Connecting device. 3,776,650, Cl. 403-191.000.

Zey, Edward Gustave; and Stubbeman, Robert Frank, to Celanese Corporation. Trimethylolpropane recovery. 3,776,963, Cl. 260-637.00p.

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Zichis, Joseph, to Beckman Instruments, Inc. Method and reagents for the diagnosis of viral diseases. 3,777,014, Cl. 424-12.000.

Ziegler, George William, Jr.; and Demler, Henry William, Jr., to AMP Incorporated. Aluminum electrical connection. 3,777,051, Cl. 174-94.00r.

Zielinski, James, to Esso Research and Engineering Company. Pesticidal semicarbazide and biuret derivatives. 3,776,955, Cl. 260-552.0sc.

Zinkgraf, Bernhard A.; and Williams, Jack Leroy, to Krafto Corporation. Container and rack for presenting articles. 3,776,419, Cl. 221-197.000.

Zirkle, Charles: *See*—
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Zwald, Frederick K.: *See*—
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Zweidler, Reinhard; Kabas, Guglielmo; Schlaepfer, Hans; and Fletcher, Ian John, to Ciba-Geigy Corporation. Styryltriazoles, their use for the optical brightening of organic materials, and processes for their manufacture. 3,776,905, Cl. 260-240.100.

LIST OF DEFENSIVE PUBLICATIONS

APPLICANTS TO WHOM

DEFENSIVE PUBLICATIONS WERE ISSUED ON THE 4TH DAY OF DECEMBER, 1973

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O. G. 687.

Anderson, Albert E., Jr., and I. F. Salminen. Synthesis of chlorinated ballasted quinones. T917,001, 12–4–73. Cl. 260—396.

Bonnes, John A.: *See*—
Hair, Douglas E., and Bonnes. T917,007.

Brayton, Robert K., F. G. Gustavson, and G. D. Hachtel, to International Business Machines Corp. Method of storage reclamation in sparse matrix techniques. T917,010, 12–4–73, Cl. 444—1.

Du Pont de Nemours, E. I., and Co.: *See*—
Knight, Everett W. T917,005.
Mahr, Tibor G. T917,012.

Edwards, Robert F.: *See*—
Moif, Cecil J., and Edwards. T917,006.

Fajans, Robert G., to Hercules Inc. Hot melt adhesive containing hydrogenated aromatic hydrocarbon resin trackifier. T917,008, 12–4–73, Cl. 260—28.5.

Goffe, Charles A., R. D. Lindholm, and P. M. Stacy. Photographic process and product. T917,003, 12–4–73, Cl. 96—48.

Grannen, Edward A., and L. Robinson, to Occidental Petroleum Corp. Sequestering resin from cyanoethylated poly-(ethylene imine). T917,011, 12–4–73, Cl. 260—2.2.

Gustavson, Fred G.: *See*—
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Hachtel, Gary D.: *See*—
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Hair, Douglas E., and J. A. Bonnes. Centralized memory access module for a data processing system. T917,007, 12–4–73, Cl. 340—172.5.

Hercules Inc.: *See*—
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Holloway, John T.: *See*—
Young, Warren L., Holloway, and Kenney. T917,004.

International Business Machines Corp.: *See*—
Brayton, Robert K., Gustavson, and Hachtel. T917,010.

Joyner, Frederick B.: *See*—
Meyer, Max F., Jr., Joyner, and Wooten. T917,009.

Kennedy, James S.: *See*—
Young, Warren L., Holloway, and Kenney. T917,004.

Knight, Everett W., to E. I. Du Pont de Nemours, and Co. Pipe cement. T917,005, 12–4–73, Cl. 260—30.4.

Lindholm, Robert D.: *See*—
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Mahr, Tibor G., to E. I. Du Pont de Nemours, and Co. PVC-containing blends and films thereof. T917,012, 12–4–73, Cl. 260—28.5.

Moif, Cecil J., and R. F. Edwards, to Westinghouse Electric Corp. Dynamoelectric machinery utilizing superconductive windings. T917,006, 12–4–73, Cl. 310—52.

Myer, Max F., Jr., F. B. Joyner, and W. C. Willis, Jr. Thermoplastic polyolefin molding compositions glass fibers which have been treated with an anionic emulsion of a modified polyolefin. T917,009, 12–4–73, Cl. 260—41.

Occidental Petroleum Corp.: *See*—
Grannen, Edward A., and Robinson. T917,011.

Robinson, Leon: *See*—
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Salminen, Ilmari F.: *See*—
Anderson, Albert E., Jr., and Salminen. T917,001.

Sanders, Robert R. Sewing thread having a silicone lubricant and flame retardant on the surface of thread. T917,002, 12–4–73, Cl. 117—136.

Stacy, Peter M.: *See*—
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Young, Warren L., J. T. Holloway, and J. S. Kennedy. Process for the chlorination of polyolefins. T917,004, 12–4–73, Cl. 260—296.

LIST OF REISSUE PATENTEES

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NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bolger, Leonard F., to Shell Oil Co. Operating technique for sulfur slurry pipeline. Re. 27,831, 12–4–73, Cl. 302—66.

Fisher Controls Co., Inc.: *See*—
Tiffany, Floyd L. Re. 27,829.

Hunter Douglas International N.V.: *See*—
Ledoux, Pierre A. Re. 27,827.

Langley, John A., to Outboard Marine Corp. Marine propulsion device. Re. 27,826, 12–4–73, Cl. 74—385.

Ledoux, Pierre A., to Hunter Douglas International N.V. Heated or cooled ceiling or wall structures. Re. 27,827, 12–4–73, Cl. 165—54.

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Precision Produce Specialties Inc., and 36¼ to Calavo Growers of Calif.: *See*—
Roesner, Lawrence C., and Moen. Re. 27,825.

Roesner, Lawrence C., and L. E. Moen, to Precision Produce Specialties Inc., and 36¼ to Calavo Growers of Calif. Bottom sealing machine. Re. 27,825, 12–4–73, Cl. 93—55.

Salonen, Albert R. Applicator for dispensing a molten material. Re. 27,828, 12–4–73, Cl. 222—146.

Schoerner, Roger J., to Southwire Co. Multifilament conductor. Re. 27,830, 12–4–73, Cl. 174—128.

Schoerner, Roger J., to Southwire Co. Solid insulated conductor. Re. 27,832, 12–4–73, Cl. 174—110.

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Schoerner, Roger J. Re. 27,832.

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Biondi, George, and R. Fanucchi. Ice bucket. 229,471, 12–4–73, Cl. D7—78.

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Borsani, Giancarlo. Spring latch. 229,479, 12–4–73, Cl. D8—203.

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Breedlove, Craig N. Racing vehicle. 229,491, 12–4–73, Cl. D12—85.

Brown, Dwight C. Corrugated strip fastener. 229,484, 12–4–73, Cl. D9—252.

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Krumin, Donald K., and R. J. Toth, to Motorola, Inc. Battery charger or similar article. 229,500, 12–4–73, Cl. D26—15.

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Radio Steel & Mfg. Co.: *See*—
Pasin, Mario A. 229,501.

Roper, Ralph E., to Wallace Expanding Machines, Inc. Support tray. 229,486, 12–4–73, Cl. D12—53.

Ryan, James J. Jewelry finding. 229,505, 12–4–73, Cl. D45—1.

Salisky, Sallyann Z., to International Playtex Corp. Girdle. 229,453, 12–4–73, Cl. D2—24.

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Salsgiver, John P., to United Technical Corp. Laboratory instrument case. 229,515, 12–4–73, Cl. D83—1.

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Schneider, Marshall C., to Charles D. Barnes Co. Display cube with pedestal stand. 229,458, 12–4–73, Cl. D6—20.

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Smith, Harvey J., to Modern Metal Products Co. Display, dispensing and storage cabinet. 229,466, 12–4–73, Cl. D6—170.

Snyder, Merton F.: *See*—
Klemenhagen, Dale A., Snyder, and Lindquist. 229,503.

Sotiropoulos, Peter G.: *See*—
Marshall, Kenneth C., Sotiropoulos, and Piros. 229,463.

Speakman Co.: *See*—
Landell, Harper. 229,495.

Spooner, Leonard P. J.: *See*—
Plampton, Stanley N., and Spooner. 229,456.

Stanley Works (Great Britain) Ltd.: *See*—
Carter, Ronald D. 229,477.

Steketee-Van Huis: *See*—
Petersen, Steven H. 229,485.

Suhard, Paul F., to Union de Brasseries. Bottle. 229,482, 12–4–73, Cl. D9—147.

TC Products: *See*—
Chadwick, Eric W. 229,506.

Tegner, Raymond U. H., to Amerock Corp. Post for soap dish holders or the like. 229,460, 12–4–73, Cl. D6—86.

Tegner, Raymond U. H., to Amerock Corp. Tissue holder. 229,461, 12–4–73, Cl. D6—97.

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Laakkonen, Launo. 229,521.

Thielen, James E. Driving pad riser for disc floor surfacing machine. 229,502, 12–4–73, Cl. D37—1.

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Krumin, Donald K., and Toth. 229,499.
Krumin, Donald K., and Toth. 229,500.

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Pollard, Rose F. 229,470.

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Uboldi, Cesare, & Figlie S.p.A.: *See*—
Uboldi, Cesare. 229,475.

Union de Brasseries: *See*—
Suhard, Paul F. 229,482.

United Technical Corp.: *See*—
Salsgiver, John P. 229,515.

Van Hoefen, Harl S. Talisman. 229,504, 12–4–73, Cl. D45—15.

Wahl Associates, Inc.: *See*—
Wahl, Michael. 229,462.

Wahl, Michael, to Wahl Associates, Inc. Display rack for shoes. 229,462, 12–4–73, Cl. D6—116.

Wallace Expanding Machines, Inc.: *See*—
Roper, Ralph E. 229,486.

Werner, Nicholas: *See*—
Brandt, Harvey R., and Werner. 229,498.

Willoughby, Paul J.: *See*—
Scheurer, Ronald J. 229,516.

Wilson, John C., to Baxter Laboratories, Inc. Bottle sling. 229,517, 12–4–73, Cl. D83—8.

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CLASSIFICATION OF PATENTS

ISSUED DECEMBER 4, 1973

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2
8 3,775,774
80 3,775,775
149 3,775,776

CLASS 4
1 3,775,777
67A 3,775,778
166 3,775,779
252R 3,775,780

CLASS 5
61 3,775,781
81R 3,775,784
82 3,775,782
201 3,775,783
341 3,775,785

CLASS 6
12R 3,775,786

CLASS 8
142 3,776,693
174 3,776,690
177AB 3,776,691
181 3,776,692

CLASS 9
8R 3,775,787
344 3,775,788

CLASS 10
52 3,775,789
86CL 3,775,791
86F 3,775,790
152T 3,775,792

CLASS 12
1R 3,775,793
3,775,794
13.2 3,775,795
54.3 3,775,796
145 3,775,797

CLASS 13
6 3,777,040
17 3,777,041
18 3,777,042
32 3,777,043
33 3,777,044

CLASS 15
21E 3,775,798
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28 3,775,800
104.93 3,775,801
147A 3,775,802
250.29 3,775,803
302 3,775,804
304 3,775,805
306A 3,775,806

CLASS 16
114R 3,775,807
124 3,775,808

CLASS 17
32 3,775,809

CLASS 18
.5A 3,776,361

CLASS 21
102R 3,776,694

CLASS 23
230PC 3,776,695
230B 3,776,698
230R 3,776,696
232R 3,776,697
259 3,776,699
3,776,700
284 3,776,702
288R 3,776,701
301SP 3,776,703

CLASS 24
30.5S 3,775,810
122.6 3,775,811
205.11R 3,775,812
230A 3,775,813

CLASS 28
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CLASS 29
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96 3,775,817
3,775,818
103A 3,775,819
118 3,775,820
129 3,775,821
157 3,775,822
182 3,776,705
182.5 3,775,823
3,776,704
3,776,706
203R 3,775,824
207.5ST 3,775,815
212D 3,775,825
3,775,826
275 3,775,827
401 3,775,828
426 3,775,829
434 3,775,830
447 3,775,831
450 3,775,832
470.1 3,775,833
470.3 3,775,834
477.3 3,775,835
483 3,775,836
568 3,775,837
577 3,775,838
595 3,775,839
599 3,775,840
605 3,775,841
606 3,775,842
612 3,775,843
626 3,775,844

CLASS 30
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262 3,775,846
353 3,775,847

CLASS 32
14A 3,775,850
26 3,775,851
59 3,775,849

CLASS 33
23E 3,775,852
27C 3,775,853
168R 3,775,858
174F 3,775,855
174R 3,775,854
180R 3,775,856
185R 3,775,857
338 3,775,859

CLASS 34
1 3,775,860
99 3,775,861
105 3,775,862
166 3,775,863

CLASS 35
9A 3,775,864
17 3,775,865
3,775,867
22A 3,775,868
48R 3,775,869
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CLASS 36
2.5AL 3,775,866
3,775,871
3,775,872
11.5 3,775,873
67D 3,775,874
72A 3,775,875

CLASS 37
2R 3,775,876
42VL 3,775,877
43L 3,775,878
118R 3,775,879

CLASS 38
66 3,775,880

CLASS 40
2C 3,775,881
10C 3,775,882
106.25 3,775,883
124.1 3,775,884
3,775,885
125G 3,775,887
130R 3,775,886

CLASS 42
58 3,775,888
90 3,775,889

CLASS 43
6.5 3,775,890
9 3,775,891
42.14 3,775,892
54.5A 3,775,893
3,775,894
54.5R 3,775,895
81 3,775,896

CLASS 46
1K 3,775,897
7 3,775,898
3,775,899
120 3,775,900
239 3,775,901
244A 3,775,902

CLASS 47
37 3,775,903
38.1 3,775,904

CLASS 49
131 3,775,912
153 3,775,905
358 3,775,906
491 3,775,907

CLASS 51
72R 3,775,908
110 3,775,909
165.77 3,775,910
170T 3,775,911
246 3,775,913
392 3,775,923

CLASS 52
1 3,775,915
125 3,775,916
155 3,775,924
169 3,775,917
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172 3,775,914
236 3,775,919
241 3,775,920
367 3,775,922
471 3,775,921
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741 3,775,928
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22B 3,775,931
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75 3,775,937
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164 3,775,938
198R 3,775,939
212 3,775,940
246 3,775,941
264 3,775,942
282 3,775,943
334 3,775,944
385 3,775,945

CLASS 55
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159 3,775,947
238 3,775,948
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417 3,775,951

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16.4 3,775,952
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CLASS 57
34AT 3,775,955
58.89 3,775,957
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140R 3,775,960
157S 3,775,961

CLASS 58
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50R 3,775,964
57.5 3,775,967
58 3,775,965
3,775,966
116R 3,775,968

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CLASS 60
6 3,775,970
13N 3,775,971
13R 3,775,972
34.34 3,775,974
39.25 3,775,973
39.32 3,775,975
39.33 3,775,976
260 3,775,977
317 3,775,978
322 3,775,979
462 3,775,980
490 3,775,981

CLASS 61
1F 3,775,982
26 3,775,983
35 3,775,984
72.1 3,775,985
72.3 3,775,986
3,775,987

CLASS 62
23 3,775,988
55 3,775,989
58 3,775,990
72 3,775,991
73 3,775,992
95 3,775,993
177 3,775,994
196 3,775,995
490 3,775,996

CLASS 64
9 3,775,997
30D 3,775,998

CLASS 65
29 3,776,707
50 3,775,999
114 3,776,708
3,776,709
134 3,776,710
261 3,776,711
348 3,776,712

CLASS 66
9R 3,776,000
87 3,776,002
154A 3,776,003

CLASS 68
5E 3,776,004
3,776,005

CLASS 70
74 3,776,006
86 3,776,007
368 3,776,008
459 3,776,009

CLASS 71
33 3,776,713
98 3,776,714
111 3,776,715
117 3,776,716

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231 3,776,013
240 3,776,014
324 3,776,015
327 3,776,016
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367 3,776,018
404 3,776,019
445 3,776,020
453 3,776,021
455 3,776,022

CLASS 73
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67.7 3,776,026
70 3,776,027
88R 3,776,028
3,776,029
93 3,776,030
95 3,776,031
155 3,776,032
194B 3,776,033
194M 3,776,034
199 3,776,035
210 3,776,036
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341 3,776,039
362AR 3,776,040
414 3,776,041
421B 3,776,042
490 3,776,043
516LM 3,776,044

CLASS 74
20 3,776,045
50 3,776,046
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142 3,776,050
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230.17A 3,776,052
230.17E 3,776,053
230.5 3,776,059
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424.7 3,776,060
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480R 3,776,061
492 3,776,062
520 3,776,063
557 3,776,064
573 3,776,065
763 3,776,066
801 3,776,067
866 3,776,048

CLASS 75
38 3,776,717
63 3,776,718
76 3,776,719
126M 3,776,720

CLASS 76
82 3,776,068

CLASS 81
9.5A 3,776,069
415 3,776,071

CLASS 82
52 3,776,070

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47 3,776,073
71 3,776,074
110 3,776,075
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175 3,776,077
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225 3,776,079
262 3,776,080
272 3,776,081
304 3,776,082
324 3,776,083
342 3,776,084
449 3,776,085
637 3,776,086

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376 3,776,089
380 3,776,090
403 3,776,091

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36A 3,776,094
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174 3,776,096

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16 3,776,097

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420 3,776,101
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39R 3,776,108
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1.8 3,776,724
2 3,776,725
3 3,776,726
27H 3,776,727
29L 3,776,728
35.1 3,776,729
50R 3,776,730
66.4 3,776,731
68 3,776,733
76C 3,776,732
86R 3,776,734
115R 3,776,735
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126 3,776,738
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33 3,776,122
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403 3,776,125
404 3,776,126
482 3,776,127

CLASS 100
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98R 3,776,129

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93C 3,776,131
129 3,776,132
147 3,776,133
226 3,776,134

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38 3,776,136
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70.2R 3,776,138
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CLASS 105
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343 3,776,143
406R 3,776,144

CLASS 106
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15FP 3,776,741
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54 3,776,745
73.4 3,776,744
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84 3,776,747
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129L 3,776,176
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137A 3,776,178
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37LE 3,776,757
38 3,776,758
69 3,776,759
72 3,776,760
76P 3,776,761
93.1GD 3,776,762
105.3 3,776,763
124A 3,776,764
136 3,776,765
138.8F 3,776,766
139.4 3,776,767
140A 3,776,768
212 3,776,769
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301 3,776,180
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124 3,776,792
132 3,776,793
143 3,776,794
157 3,776,795
181 3,776,796
220 3,776,797
269 3,776,798
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345 3,776,800
350 3,776,801
420 3,776,802
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515 3,776,804
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2 3,776,805
88 3,776,806
124 3,776,807
141 3,776,808
164 3,776,809
170 3,776,810
253 3,776,811
CLASS 162
168 3,776,812
CLASS 164
52 3,776,294
66 3,776,295
85 3,776,296
86 3,776,297
154 3,776,298
385 3,776,299
403 3,776,300
CLASS 165
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82 3,776,302
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96 3,776,304
107 3,776,305
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2 3,776,322
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42 3,777,046
3,777,047
73R 3,777,048
78 3,777,049
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94R 3,777,051
110R Re.27,832
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138D 3,777,052
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4 3,776,321
4.51 3,776,323
CLASS 176
19R 3,776,813
87 3,776,814
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116 3,776,324
CLASS 178
5.1 3,777,053
5.4CD 3,777,060
5.4R 3,777,061
6.6SF 3,777,054
6.7 3,777,055

7.1 3,777,056
7.8 3,777,057
7.88 3,777,059
69.5G 3,777,063
69.5R 3,777,062
3,777,066
CLASS 179
1.5FS 3,777,064
6TA 3,777,065
27CA 3,777,058
81R 3,777,067
84R 3,777,069
84.5S 3,777,068
100.2MD 3,777,072
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100.4ST 3,777,076
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64R 3,776,354
77R 3,776,355
79.2R 3,776,356
82R 3,776,357
84 3,776,358
90 3,776,359
127 3,776,360
CLASS 181
24 3,776,362
33C 3,776,363
48 3,776,364
50 3,776,365
57 3,776,366
CLASS 182
2 3,776,367
19 3,776,368
CLASS 184
15R 3,776,369
CLASS 187
17 3,776,328
CLASS 188
1A 3,776,329
67 3,776,330
166 3,776,331
290 3,776,332
344 3,776,333
CLASS 190
41R 3,776,334
CLASS 192
41 3,776,335
95 3,776,336
110B 3,776,337
CLASS 194
9R 3,776,338
10 3,776,339
CLASS 195
36R 3,776,815
66R 3,776,816
103.5R 3,776,817
139 3,776,818
CLASS 197
1R 3,776,340
127R 3,776,341
CLASS 198
20C 3,776,343
20R 3,776,342
20 3,776,344
24 3,776,345
33AD 3,776,346
127R 3,776,347
131 3,776,348
195 3,776,349
204 3,776,350
219 3,776,351
220DB 3,776,352
CLASS 199
56 3,776,370
CLASS 200
5A 3,777,082
48R 3,777,083
50A 3,777,084
51LM 3,777,085
52R 3,777,086
67A 3,777,087
80 3,777,088
144B 3,777,089
159B 3,777,090
166BC 3,777,091
172R 3,777,092
181 3,777,093

CLASS 204
1T 3,776,819
15 3,776,820
43G 3,776,821
46 3,776,822
60 3,776,823
78 3,776,824
81 3,776,825
107 3,776,826
129.46 3,776,827
129.65 3,776,828
164 3,776,829
192 3,776,830
195R 3,776,832
195S 3,776,831
243R 3,776,833
290F 3,776,834
CLASS 206
1.7 3,776,371
7H 3,776,372
16R 3,776,373
45.14 3,776,374
45.34 3,776,375
65E 3,776,376
CLASS 208
48AA 3,776,835
65 3,776,836
3,776,837
74 3,776,838
110 3,776,839
139 3,776,840
CLASS 209
73 3,776,377
3,776,378
3,776,379
111.5 3,776,380
111.6 3,776,381
403 3,776,382
CLASS 210
17 3,776,841
23 3,776,842
199 3,776,383
209 3,776,384
304 3,776,385
398 3,776,386
CLASS 211
60T 3,776,387
86 3,776,388
90 3,776,389
CLASS 212
122 3,776,390
CLASS 213
8 3,776,391
CLASS 214
1BV 3,776,393
1R 3,776,392
3,776,394
6BA 3,776,395
8.5A 3,776,396
8.5C 3,776,398
8.5K 3,776,397
16.4A 3,776,399
38BA 3,776,400
55 3,776,401
75T 3,776,402
137 3,776,403
152 3,776,404
310 3,776,405
CLASS 215
9 3,776,406
3,776,407
11E 3,776,408
CLASS 219
10.49 3,777,094
10.55 3,777,095
3,777,098
3,777,099
10.57 3,777,096
10.59 3,777,097
10.75 3,777,100
60A 3,777,101
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69C 3,777,102
69G 3,777,104
69P 3,777,108
73 3,777,105
76 3,777,106
82 3,777,107
85 3,777,109
105 3,777,111
121P 3,777,112
125R 3,777,110
3,777,115
137 3,777,113
160 3,777,114
216 3,777,116
300 3,777,117
394 3,777,118
CLASS 220
3 3,776,409
9R 3,776,413
19 3,776,410

20 3,776,411
71 3,776,414
85P 3,776,412
90 3,776,415
CLASS 221
21 3,776,416
67 3,776,417
125 3,776,418
197 3,776,419
211 3,776,420
251 3,776,421
CLASS 222
3 3,776,422
26 3,776,423
94 3,776,424
101 3,776,425
146HE Re.27,828
3,776,426
153 3,776,428
162 3,776,429
177 3,776,430
178 3,776,431
193 3,776,432
394 3,776,427
519 3,776,433
525 3,776,434
566 3,776,435
CLASS 223
1 3,776,436
CLASS 224
42.45R 3,776,437
CLASS 225
93 3,776,438
CLASS 226
97 3,776,440
114 3,776,441
198 3,776,442
CLASS 227
10 3,776,443
130 3,776,444
3,776,445
CLASS 228
2 3,776,446
3 3,776,447
5 3,776,448
29 3,776,449
CLASS 229
7R 3,776,450
55 3,776,451
CLASS 234
1 3,776,452
CLASS 235
52 3,776,453
61.11A 3,777,119
61.11R 3,777,120
61.12R 3,776,454
92EA 3,777,121
150.1 3,777,122
150.22 3,776,455
150.27 3,777,123
151 3,777,124
151.11 3,777,125
3,777,128
151.3 3,777,126
3,777,127
3,777,129
152 3,777,130
156 3,777,131
164 3,777,132
181 3,777,133
CLASS 236
34.5 3,776,457
93 3,776,456
CLASS 239
33 3,776,458
77 3,776,459
101 3,776,460
125 3,776,461
134 3,776,462
204 3,776,463
229 3,776,464
251 3,776,465
265.15 3,776,466
265.35 3,776,467
310 3,776,468
446 3,776,469
534 3,776,470
553.5 3,776,471
591 3,776,472
CLASS 240
6.42 3,777,136
10R 3,777,134
41.35R 3,777,135
52R 3,777,137
84 3,777,138
CLASS 241
15 3,776,473
23 3,776,474
33 3,776,475
34 3,776,476
72 3,776,477

103 3,776,478
CLASS 242
35.6R 3,776,479
47.01 3,776,480
56A 3,776,481
67.1R 3,776,482
71.1 3,776,483
78.6 3,776,484
106 3,776,485
118.3 3,776,486
182 3,776,487
183 3,776,488
CLASS 244
1N 3,776,489
3.21 3,776,490
42CB 3,776,491
137R 3,776,492
147 3,776,493
CLASS 246
125 3,777,139
CLASS 248
18 3,776,494
71 3,776,495
182 3,776,496
205A 3,776,497
221 3,776,498
298 3,776,499
333 3,776,500
CLASS 249
2 3,776,501
33 3,776,502
106 3,776,503
121 3,776,504
CLASS 250
201 3,777,151
206 3,777,152
209 3,777,149
3,777,150
227 3,777,153
3,777,154
229 3,777,155
264 3,777,147
280 3,777,156
302 3,777,143
3,777,157
303 3,777,145
305 3,777,159
324 3,777,158
327 3,777,142
338 3,777,160
361 3,777,161
366 3,777,144
369 3,777,146
468 3,777,162
490 3,777,140
491 3,777,163
505 3,777,148
521 3,777,141
531 3,777,164
555 3,777,165
3,777,166
560 3,777,167
561 3,777,168
565 3,777,169
569 3,777,170
572 3,777,171
575 3,777,172
3,777,173
CLASS 251
163 3,776,505
172 3,776,506
248 3,776,507
306 3,776,509
333 3,776,510
CLASS 252
7 3,776,843
8.75 3,776,844
12 3,776,845
32.7E 3,776,846
33 3,776,847
49.5 3,776,848
62.1 3,776,849
89 3,776,850
3,776,851
143 3,776,852
171 3,776,853
190 3,776,854
251R 3,776,870
301.1R 3,776,508
3,776,855
301.1W 3,776,856
308 3,776,857
431R 3,776,858
455R 3,776,860
462 3,776,859
545 3,776,861
CLASS 254
1 3,776,511
150FH 3,776,513
3,776,518
150R 3,776,517
166 3,776,515
167 3,776,514
175.5 3,776,519
190R 3,776,516
CLASS 256
13.1 3,776,520
24 3,776,521
47 3,776,522
73 3,776,523
CLASS 259
4 3,776,524
7 3,776,525
72 3,776,526
91 3,776,527
102 3,776,512
183 3,776,528
185 3,776,529
CLASS 260
2A 3,776,862
3,776,863
17R 3,776,864
18N 3,776,865
18R 3,776,866
21 3,776,867
23EP 3,776,868
24 3,776,869
28.5D 3,776,871
29.1R 3,776,873
29.6TA 3,776,874
29.7AT 3,776,872
29.7R 3,776,876
31.2R 3,776,875
31.8M 3,776,877
32.2 3,776,878
33.4R 3,776,879
37SB 3,776,881
37R 3,776,880
45.75B 3,776,883
45.85B 3,776,884
45.9R 3,776,882
46.5G 3,776,885
47C 3,776,886
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73R 3,776,888
77.5CR 3,776,889
78UA 3,776,976
78R 3,776,890
79.5B 3,776,891
80.73 3,776,892
83.7 3,776,893
92.8W 3,776,894
93.1 3,776,895
94.2M 3,776,896
124R 3,776,897
156 3,776,898
211.5R 3,776,899
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239.3A 3,776,901
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248AS 3,776,903
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256.4H 3,776,910
283S 3,776,912
293.54 3,776,914
293.56 3,776,915
293.69 3,776,913
294.9 3,776,916
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309.5 3,776,921
326.16 3,776,923
326.5B 3,776,922
332.2R 3,776,924
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453PC 3,776,935
455A 3,776,936
465B 3,776,937
468D 3,776,938
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468G 3,776,940
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475D 3,776,945
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486R 3,776,947
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515P 3,776,949
533A 3,776,951
533N 3,776,952
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607A 3,776,960
613R 3,776,961
624C 3,776,962
637P 3,776,963
658R 3,776,969
665R 3,776,964
666PY 3,776,966
666A 3,776,967
666R 3,776,965
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669A 3,776,970
671P 3,776,971
677A 3,776,972
683D 3,776,973
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872 3,776,980
878B 3,776,979
880B 3,776,981
884 3,776,982
901 3,776,983
943 3,776,984
980 3,776,985
985 3,776,986
CLASS 261
4 3,776,530
87 3,776,531
CLASS 264
.5 3,776,987
14 3,776,988
53 3,776,989
54 3,776,990
89 3,776,991
122 3,776,992
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170 3,776,994
219 3,776,995
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CLASS 266
1 3,776,532
24 3,776,533
34R 3,776,535
34V 3,776,534
38 3,776,439
CLASS 267
35 3,776,536
CLASS 269
13 3,776,537
46 3,776,538
81 3,776,539
328 3,776,540
CLASS 270
31 3,776,541
3,776,542
53 3,776,543
CLASS 271
3 3,776,544
4 3,776,545
64 3,776,546
CLASS 272
57R 3,776,547
CLASS 273
1M 3,776,548
1.5A 3,776,550
1.5R 3,776,549
95A 3,776,551
105.2 3,776,553
130R 3,776,552
131AB 3,776,554
186A 3,776,556
186R 3,776,555
CLASS 274
23R 3,776,557
CLASS 277
9 3,776,558
56 3,776,559
88 3,776,560
116.8 3,776,561
CLASS 279
2 3,776,562
CLASS 280
11.13L 3,776,563
11.35M 3,776,566
11.35N 3,776,565
11.35T 3,776,564
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3,776,568
106T 3,776,569
150AB 3,776,570
154.5R 3,776,571
292 3,776,572
405A 3,776,573
CLASS 283
1 3,776,574
CLASS 285
18 3,776,575
27 3,776,576
31 3,776,577
94 3,776,578
233 3,776,579
CLASS 290
40 3,777,174
CLASS 292
17 3,776,580
39 3,776,581
92 3,776,582
307R 3,776,583
CLASS 294
21 3,776,584
74 3,776,585
102R 3,776,586
CLASS 296
1S 3,776,587
28R 3,776,589
95R 3,776,590
146 3,776,588
3,776,591
CLASS 299
1 3,776,592
8 3,776,593
18 3,776,594
31 3,776,595
CLASS 300
2 3,776,596
CLASS 301
6V 3,776,597
CLASS 302
3 3,776,599
59 3,776,600
64 3,776,601
66 Re.27,831
CLASS 303
6C 3,776,602
3,776,603
21CF 3,776,606
21EB 3,776,604
21A 3,776,605
22R 3,776,607
CLASS 305
38 3,776,598
CLASS 307
10SB 3,777,175
108 3,777,176
118 Re.27,829
3,777,177
136 3,777,178
3,777,179
216 3,777,180
232 3,777,181
268 3,777,182
3,777,183
3,777,184
291 3,777,185
304 3,777,186
310 3,777,187
311 3,777,188
CLASS 308
3.5 3,776,610
3.8 3,776,608
9 3,776,609
36.1 3,776,611
238 3,776,612
CLASS 310
8.1 3,777,192
8.3 3,777,189
60 3,777,190
67 3,777,191
68D 3,777,193
87 3,777,194
91 3,777,195
156 3,777,196
194 3,777,197
200 3,777,198
CLASS 313
27 3,777,199
32 3,777,200
65R 3,777,201
85S 3,777,202
3,777,204
108A 3,777,205
217 3,777,206
222 3,777,207
231 3,777,208
238 3,777,209
256 3,777,210
CLASS 315
31R 3,777,211
85S 3,777,203
241P 3,777,212
323 3,777,213
CLASS 316
20 3,776,613
CLASS 317
3 3,777,214
26 3,777,215
31 3,777,216
33C 3,777,217
59 3,777,218
61.5 3,777,219
101CP 3,777,221
101A 3,777,220
112 3,777,222
118 3,777,223
120 3,777,224
130 3,777,225
234R 3,777,238
235R 3,777,227
* 3,777,228
3,777,229
3,777,230
249R 3,777,226
262R 3,777,231
CLASS 318
122 3,777,236
221E 3,777,232
313 3,777,233
326 3,777,234
331 3,777,244
341 3,777,235
345 3,777,237
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471 3,777,240
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586 3,777,242
621 3,777,243
685 3,777,245
696 3,777,246
CLASS 320
2 3,777,247
CLASS 321
3,777,248
8 3,777,249
9R 3,777,250
CLASS 323
4 3,777,251
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22T 3,777,253
CLASS 324
.5R 3,777,254
34PS 3,777,255
57R 3,777,256
61QS 3,777,258
61R 3,777,257
62 3,777,259
64 3,777,260
73R 3,777,261
103P 3,777,262
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146 3,777,264
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182 3,777,266
CLASS 325
18 3,777,267
38R 3,777,268
163 3,777,269
363 3,777,270
CLASS 328
16 3,777,271
CLASS 329
104 3,777,272
200 3,777,273
CLASS 330
5.5 3,777,274
10 3,777,275
CLASS 331
4 3,777,276
49 3,777,277
78 3,777,278
94.5 3,777,279
3,777,280
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3,777,282
3,777,283
CLASS 333
10 3,777,284
70S 3,777,286
84M 3,777,287
CLASS 334
1 3,777,288
15 3,777,289
3,777,290
CLASS 335
16 3,777,291
126 3,777,292
176 3,777,293
236 3,777,294
297 3,777,295
CLASS 336
120 3,777,296
CLASS 337
161 3,777,297
CLASS 339
16R 3,777,298
17CF 3,777,285
17L 3,777,299
21R 3,777,300
217S 3,777,301
223R 3,777,302
258R 3,777,303
CLASS 340
4R 3,777,304
16R 3,777,305
64 3,777,306
147CN 3,777,308
CLASS 346
75 3,777,307
CLASS 350
35 3,776,614
160LC 3,776,615
162SF 3,776,616
245 3,776,617
288 3,776,618
CLASS 351
12 3,776,619
13 3,776,620
CLASS 352
85 3,776,621
119 3,776,622
124 3,776,623
130 3,776,624
170 3,776,625
194 3,776,626
CLASS 355
3 3,776,627
3,776,628
8 3,776,629
10 3,776,630
15 3,776,631
3,776,632
132 3,776,633
133 3,776,634
CLASS 356
43 3,776,635
106 3,776,636
3,776,637
124 3,776,638
126 3,776,639
160 3,776,640
171 3,776,641
188 3,776,642
244 3,776,643
CLASS 401
7 3,776,644
188 3,776,645
199 3,776,646
CLASS 402
17 3,776,648
CLASS 403
90 3,776,649
191 3,776,650
248 3,776,651
282 3,776,652
372 3,776,653
CLASS 404
65 3,776,654
CLASS 408
1 3,776,655
233 3,776,656
241G 3,776,647
CLASS 415
53 3,776,657
88 3,776,658
196 3,776,660
200 3,776,659
CLASS 417
12 3,776,661
37 3,776,662
64 3,776,663
243 3,776,664
252 3,776,665
411 3,776,666
454 3,776,667
CLASS 418
97 3,776,668
CLASS 423
20 3,777,003
3,777,004
27 3,777,005
118 3,777,006
268 3,777,007
316 3,777,008
508 3,777,009
573 3,777,010
592 3,777,011
610 3,777,012

	3,777,013	180	3,777,020		3,777,030		CLASS 425	262	3,776,677	62	3,777,039
	CLASS 424	195	3,777,021	272	3,777,031	8	3,776,669	310	3,776,678		CLASS 431
12	3,777,014	200	3,777,023	274	3,777,032	72	3,776,672	325	3,776,679	66	3,776,684
15	3,777,015		3,777,024	283	3,777,033	114	3,776,670	326	3,776,680	93	3,776,685
80	3,777,016	246	3,777,025	285	3,777,034	125	3,776,673	346	3,776,681		3,776,686
84	3,777,017	248	3,777,026	300	3,777,035	134	3,776,674	384	3,776,682		CLASS 432
117	3,777,018	263	3,777,027		3,777,036	139	3,776,675	440	3,776,683	6	3,776,687
150	3,777,022		3,777,028	341	3,777,037	164	3,776,671		CLASS 426	14	3,776,688
175	3,777,019	266	3,777,029			250	3,776,676	19	3,777,038	183	3,776,689

CLASSIFICATION OF DESIGNS

D02—	24	229,453		165	229,464		93	229,476		151	229,487		229,500	D61—	1N	229,511
		229,454		168	229,465		101	229,477			229,488	D34—	AJ 229,501	D64—	11B	229,512
		229,455		170	229,466		179	229,478		156	229,489	D37—	1 229,502		R	229,513
	321	229,456		179	229,467		203	229,479		173	229,490	D40—	R 229,503	D83—	1F	229,514
	600.1	229,497			229,468		232	229,480	D13—	1R	229,492	D45—	229,505			229,515
D06—	14	229,457		243	229,469		267	229,481		6	229,493		15 229,504		J	229,516
	20	229,458	D07—	74	229,470	D09—	147	229,482	D22—	11	229,494	D48—	20E 229,506		8R	229,517
	79	229,459		78	229,471		175	229,483	D23—	32	229,495		32R 229,507		12A	229,518
	86	229,460		150	229,472		245	229,485		43	229,496	D55—	1B 229,508	D85—	2B	229,519
	97	229,461		191	229,473		252	229,484	D26—	14F	229,498	D56—	4D 229,509		8A	229,520
	116	229,462	D08—	44	229,474	D12—	53	229,486		15B	229,499		229,510	D88—	3B	229,521
	162	229,463		82	229,475		85	229,491								

DEFENSIVE PUBLICATIONS APPLICATIONS

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3,776,415
3,776,440
3,776,456
3,776,521
3,776,683
3,776,797
3,776,807
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3,777,250
3,777,253

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Frederick B. Dent, *Secretary*